2017

Influence of Psychological Empowerment, Leadership, and Climate on Safety Outcomes

Christine Healy
Walden University

Walden University

College of Social and Behavioral Sciences

This is to certify that the doctoral dissertation by

Christine Healy

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee
Dr. Richard Thompson, Committee Chairperson, Psychology Faculty
Dr. Brian Cesario, Committee Member, Psychology Faculty
Dr. Frederica Hendricks-Noble, University Reviewer, Psychology Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
2017

Abstract

Influence of Psychological Empowerment, Leadership, and Climate on Safety Outcomes

by

Christine R. Healy

MA, Webster University, 2000

BS, University of Central Texas, 1999

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Industrial and Organizational Psychology

Walden University

October 2017

Abstract

Research has demonstrated that safety outcomes are impacted by workplace risk factors, but also supervisory practices and employee actions. An area that has not been explored is the impact of employee cognitions on safety outcomes defined as work-related injuries. Based on the conceptual framework of psychological empowerment (PE), the purpose of this study was to examine the relationship of employee cognitions as measured by PE as related to leadership and safety climate and the occurrence of work-related injury. The research examined the mediating effect of (PE) on the factors of leadership and safety climate and their relationship to work-related injury. A cross-sectional survey design was used to gather data from a convenience sample of 125 front-line food manufacturing employees from 3 different organizations. Multiple regression was used to analyze data from the Organization-Level Safety Climate Scale, the Psychological Empowerment Instrument, the Leader Behavior Scale, and number of self-reported injuries. The results of the analysis were non-significant. Although the results were non-significant, this study promotes positive social change in bringing awareness to the issue of employee cognitions and their role in workplace injury. Exploring the implications of cognitive variables including PE using a different methodology such as incorporating a qualitative follow-up questionnaire could lead to clarity of the value of PE in reducing workplace injury thereby positively impacting employees, organizations, family members, and tax payers.

Influence of Psychological Empowerment, Leadership, and Climate on Safety Outcomes

by

Christine R. Healy

MA, Webster University, 2000

BS, University of Central Texas, 1999

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Industrial and Organizational Psychology

Walden University

October 2017

Dedication

This dissertation is dedicated to the four most important people in my life. My father, Tom Graham, who gave me the gift of being inquisitive and who has served as my life-long mentor and champion. My mother, Jo Ann Graham, who consistently encouraged me keeping me centered through the bright and the dark times of the process. My son, Christopher Healy, for being grounded in reality; helping me to maintain perspective. Finally, my eternal partner and soul mate, Brian Healy, who patiently sacrificed through the lonely nights, weekends, and holidays for years while I worked on the project. Without his support in taking care of all the family needs from grocery shopping, to house cleaning, and even working through quantitative statistics problems with me, I would not have made it through this journey. I am forever grateful to him for his love and relentless support.

Acknowledgments

I am grateful to our Heavenly Father for the gifts He has given me throughout this journey and for the blessings He has bestowed allowing me to experience success. I thank my co-workers and friends, Ken Kaneversky, Jerico Donovan, and Kara Peterson for their relentless support and encouragement. I thank Dr. Brian Cesario for his passion, feedback, and promptness in helping me get through the process. I thank Dr, Fredrica Hendricks-Noble for her dedication to helping me and others succeed. Much gratitude goes to Dr. Rich Thompson who served as my Chair. As my first professor in the PhD program, he made a huge and positive impact on my educational experience and was a perfect choice of mentor and coach to guide me through the dissertation process. His counseling, patience, kindness, knowledge, and genuine concern for my experience created a gratifying journey Lastly, I want to thank the staff, faculty, and administration of Walden University. For without their commitment to excellence in the educational mission of online education, this dream would not have been possible for me. I am grateful for this experience.

Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction to the Study

Introduction

The incidence of non-fatal workplace injuries and illnesses in the United States approached 2.9 million cases in 2015 (Bureau of Labor Statistics, 2016a). The need to reduce the volume of workplace injuries is vital to organizational sustainability, the employee, co-workers, and family members (Leigh, 2013; The National Institute for Occupational Safety and Health, 2015). The aim of this study was to build upon previous research assessing the factors that relate to attitudes and behaviors that influence workplace injuries. Specifically, I examined the predictors of leadership style, safety climate, and employee psychological empowerment (PE) as they relate to safety outcomes. Findings regarding these predictors may provide insights that human resources professionals can use to develop various organizational interventions in areas such as policy, leadership, recruitment, and employee engagement that can influence safe behaviors and injury reduction. If company leaders, human resources, and safety professionals better understand these factors then social change may result in preservation of tax dollars, monetary savings to the price to produce goods, and most of all the health and well-being of the worker.

In this chapter, I provide the context and rationale for this study, present the research questions and hypotheses, explain the theoretical framework and nature of the study, define the variables, and discuss the main assumptions, scope, limitations, and significance of the study.

Background

Researchers have taken a variety of approaches to gain insight as to what may cause, reduce, or eliminate injuries (and associated costs) at work. For example, researchers have determined many of the risk factors associated with injury rates such as gender, age, rest times, and shift schedule (Folkard, 2008; Taiwo et al., 2009). Certain management practices such as candidate screening, management engagement, and proactive efforts can also lead to a reduction in overall injury costs (Vredenburgh, 2002). Influences such as employee safety compliance and safety participation have also lead to development of a positive safety climate motivating engagement in safety behaviors (Neal & Griffin, 2006). Regarding the role of supervisory leadership, studies have shown that it brings about safety outcomes with fairly consistent results (Barling, Loughlin, & Kelloway, 2002; Baxter, 2013; Clarke, 2013; de Koster, Stam, & Balk, 2011; Eid, Mearns, Larsson, Laberg, & Johnsen, 2012; Griffin & Hu, 2013; Nielsen, Skogstad, Matthiesen, & Einarsen, 2016).

The implications of leadership, management processes, and safety climate are important to understanding safety outcomes; however, outcomes are contingent on employee interaction, perceptions, and behaviors (Christian, Bradley, Wallace, & Burke, 2009; Fugas, Silva, &, Meliá, 2012). In studies built of the theory of planned behavior, individual attitudes and perceived behavioral control on the part of the employee have shown a positive link to safety outcomes (Fugas et al., 2012).

Although there is a wealth of research that shows the relationship of psychological climate dimensions, attitudes toward norms, and the implications of

leadership effect on safety outcomes, there is a lack of research on the implications of personal factors of attitude and cognition as they systemically combine with leadership style and perceived safety climate in influencing the employee to engage in safe behaviors (Clarke, 2010; Fugas, et al., 2012; Griffin & Hu, 2013; Probst & Estrada, 2010; Sunindijo & Zou, 2013). Research including the employee factors that correspond to leadership and safety climate such as employee PE can help advance understanding of safety behaviors and further reduce the number of injuries through application of a systems theory (Törner, 2011).

PE has research roots that can be traced to Lewin's work on employee involvement and participation (Lewin, 1947 as cited in Maynard, Gilson, & Mathieu, 2012) and Bandura's work on self-efficacy (Bandura, 1986 as cited in Conger & Kanungo, 1988). Research has shown a positive relationship between PE and work-related outcomes including increased effectiveness, higher job satisfaction, reduced strain, heightened organizational identification and commitment, and innovative performance across a variety of industries that range from healthcare to manufacturing (Ford & Tetrick, 2011; Seibert, Wang, & Courtright, 2011; Spreitzer, Kizilos, & Nason, 1997; Zhu, Sosik, Riggio, & Yang, 2012). Researchers have also investigated PE's relationship to various aspects of workplace safety. For example, a study of Malaysian occupational safety and health officers showed a positive relationship between PE, safety commitment, and perceived organizational support (Tong, Rasiah, Tong, & Lai, 2015). Ford and Tetrick (2011) found that employee perceptions of job hazards diminished their level of PE and organizational identification, which impacted their participation in safety

behaviors. A study of employees from a large chemical company showed a positive correlation between empowerment and supervisor span of control on the variables of unsafe behaviors and accidents (Hechanova-Alampay & Beehr, 2001). These studies do not investigate the cognitive attributes of the individual in relation to incurring a work-related injury. This gap in the literature provides an opportunity to understand the role of the cognitive state of the individual performing the work in conjunction with the organization-related factors of leadership and safety climate to develop appropriate interventions for reducing or eliminating workplace injury.

Statement of the Problem

The Occupational Safety and Health Administration (OSHA) spends in excess of $500 million American tax dollars per year for training, compliance, and enforcement in safety regulations for the United States worker (OSHA, 2015). Nonetheless, there remains close to 3 million OSHA reportable injuries and illnesses per year (Bureau of Labor Statistics, 2016a). Although there has been some improvement in the number of work-related safety incidents since the inception of the Occupational Safety and Health Administration in 1970 (OSHA, 2016), the overall incident level and cost of these injuries remains considerably high. This rate of incidence is harmful to the injured employee, the profits of the company, and the taxpayer.

Researchers have found numerous factors that influence safety behaviors. Among these variables, leadership style and safety climate have been linked to safety outcomes including safety participation and compliance (Clarke, 2013; Eid, 2012; Griffin & Hu, 2013; Zohar, 2000). Researchers have found situational and personal factors such as

employee attitudes toward safety developed through participation are implicated in the degree of workplace injuries and accidents (Christian et al., 2009). Various work-related attitudes such as organizational commitment, job satisfaction, and general perception of well-being have been shown to mediate the relationship between safety climate and safety behaviors (Clarke, 2010). Although previous researchers have examined relationships between numerous contextual variables linked to workplace safety and PE, none have examined the mediating effect of employee PE on the variables of safety climate and leadership style as they relate to safety outcomes. By understanding the role of employee cognition regarding their job, organization leaders, human resources professionals, and safety professionals can develop more precise programs and interventions designed to reduce work-related injuries.

Purpose of the Study

The purpose of this quantitative study was to explore the variable of employee PE as it relates to perceived safety climate and leadership style in affecting organizational safety outcomes, defined as work-related injuries incurred by an employee. I tested the mediating effect of PE on the relationship between the independent variables of safety climate and leadership style and the dependent variable of safety outcomes. Specifically, I tested whether cognitions of employees, as measured by their PE, interceded in their perceptions of leadership and the safety climate thus predicting the likelihood of their incurring a work-related injury.

Research Questions and Hypotheses

Consideration of the findings of the current literature related to workplace injuries has generated the following research questions and hypotheses. Barron and Kenny's (1986) four step model was used to examine each of these research questions including the mediation effect of PE. The research questions are as follows:

Research Question 1: Does leadership style significantly predict whether an employee will incur any workplace injuries?

$H_0$1: Leadership style does not significantly predict workplace injuries.

H_a1: Leadership style significantly predicts workplace injuries.

Research Question 2: Does safety climate significantly predict whether an employee will incur any workplace injuries?

$H_0$2: Safety climate does not significantly predict workplace injuries.

H_a2: Safety climate significantly predicts workplace injuries.

Research Question 3: Does employee PE significantly predict whether an employee will incur any workplace injuries?

$H_0$3: Employee PE does not significantly predict workplace injuries.

H_a3: Employee PE significantly predicts workplace injuries.

Research Question 4: Does employee PE mediate the relationship between the leadership style and safety climate in predicting whether an employee will incur any workplace injuries?

$H_0$4: Employee PE does not mediate the relationship between leadership style and safety climate in predicting workplace injuries.

H_a4: Employee PE mediates the relationship between leadership style and safety climate in predicting workplace injuries.

I used the following steps of the Barron and Kenny (1986) method to test these hypotheses:

1. I separately regressed the variables of leadership and safety climate on the criterion variable of safety outcomes to assess any direct effect present to be mediated.
2. I separately regressed the variables of leadership and safety climate on the mediator variable of PE to assess any effect present.
3. I regressed the mediator variable of PE on the dependent variable of safety outcomes to assess whether there is a direct effect present.
4. I conducted multiple regression using leadership and PE with safety outcomes as the dependent variable. I conducted a second multiple regression using safety climate and PE with safety outcomes as the dependent variable. These tests helped assess any indirect effect between leadership, safety climate, and PE in predicting safety outcomes.

Conceptual Framework

I used PE as the conceptual framework to understand how front-line workers' perceptions of leadership and safety climate related to safety outcomes defined as individual work-related injuries. PE is a multi-dimensional construct that encompasses the dimensions of meaning, competence, self-determination in terms of personal choice, and impact (Spreitzer, 1995b; Thomas & Velthouse, 1990). The constructs combine in an

additive fashion and are influenced by the environment in which individuals evaluate the job or tasks they are doing. Individuals interpret the job or task in terms of whether they care about the task (meaning), they have the skills to complete the task (competence), there is meaning in their performance (impact), and whether they have choice in doing the task (Thomas & Velthouse, 1990). Each of these dimensions when combined into the construct of PE contribute the individual component of a system that also includes the leadership level and the organizational level as measured by organizational safety climate in bringing about safety consequences.

I developed the overarching conceptual framework of this study by combining the multi-dimensional construct of PE, transformational leadership theory, and safety climate as they relate under systems theory, which was originally developed by Von Bertalanffy (1972). In this study, I defined a system as an interconnection of parts that share a common outcome across the variables (see Bailey, 2005). The common outcome in this study was injury rate. The literature includes many definitions of systems theory (Adams et al., 2014). For this study the subsystem component of the employee was measured using the variable of PE, the leader through the variable of leadership style, and the organization through safety climate. Therefore, it fits well with Ackoff's (2000) stipulation that a system requires at least two components that meet three criteria: (a) each element has an effect on the system as a whole, (b) the elements are interdependent, and (c) the whole cannot be subdivided and remain an effective system. In Chapter 2, I provide a more extensive explanation of the research on PE, safety climate, and

leadership constructs along with a discussion of how they combine as a system in the workplace.

Nature of the Study

This was a correlational, cross-sectional, survey study using a convenience sample of front-line production employees of food manufacturers. I chose this quantitative design because the study was focused on the topic of human safety and the research questions necessitated an objective, measurable outcome of correlations of specific variables serving as antecedents to safety outcomes based on employee perceptions. I did not choose a quasi-experimental or experimental design for this research because my intent was not to evaluate the implications of a treatment aimed at changing employee attitudes or perceptions. Rather, my goal was to identify if PE has a mediating effect on the independent variables of leadership style and safety climate in their relationship to the dependent variable of safety outcomes (Frankfort-Nachmias & Nachmias, 2008).

I collected and evaluated survey data to examine the relationships between the independent variables of leadership style and safety climate, as mediated by the employee factor of PE, on the dependent variable of individual safety outcomes. The measurement tools included the Organizational-Level Safety Climate Survey (Zohar & Luria, 2005), the Psychological Empowerment Instrument (Spreitzer, 1995); and the Transformational Leadership Inventory (Podsakoff, MacKenzie, Moorman, & Felter, 1990). My choice of these three instruments was based on the need to have a measure for the system components at the individual, leader, and organizational levels to test the relationship of

each on the implications to safety outcomes and as co-factors in a system. I analyzed the data through multiple regression using SPSS version 23 with follow up of Sobel testing for significance. Chapter 3 includes more detail on the methodology, instruments, data collection plan, data analysis procedures, and potential threats to validity.

Definition of Terms

Leadership: Leadership refers to the measure of employee perception of supervisor competencies in articulating vision, behavior modeling, encouraging acceptance of group goals, expecting high performance, and providing individualized support and intellectual stimulation (Podsakoff, MacKenzie, & Bommer, 1996, p. 265).

Psychological empowerment: PE refers to employees' personal perceptions of the combined measures of the dimensions of meaning, competence, self-determination, and impact as they perform their job duties (Spreitzer, 1995b).

Safety Climate: Safety climate refers to the measure of employee perception of the organization's emphasis on (a) monitoring and enforcing safety rules and policies, (b) the importance of employee learning and development of safety practices, and (c) identifying safety issues and providing employees safety information (Zohar & Luria, 2005).

Safety Outcomes: Safety outcomes refers to the participant self-report measure of any work-related injury they incurred in the previous 12 months.

Systems Theory: Systems theory is a theory of the interconnectedness of the supervisor's leadership style, the employee's PE, and the perception of organizational safety climate measures (Ackoff, 2000; Bailey, 2005).

Assumptions

I assumed that the sample of front-line food manufacturing employees surveyed would be representative of front-line food manufacturing employees across the United States. Additionally, I assumed that participants would respond to the questionnaire items honestly based on their understanding of the confidentiality of their participation and their ability to withdraw from the study at any time. Failure to provide such a confidence level among this sample population could have led to skewed results and misuse of the findings in development of interventions that could help drive positive safety outcomes within organizations. Finally, I assumed that the instruments chosen to measure the attitudes of participants were appropriate for this study.

Scope and Delimitations

This research study was confined to exploring the relationships between employee PE, organizational safety climate, and supervisory leadership style with respect safety outcomes in terms of work-related injuries. The relationship between safety outcomes and personal risk factors such as age and gender, and management administrative factors such as employee screening, management engagement, and management practices and other variables have been examined in other studies (Conchie, Moon, & Duncan, 2013; Folkard, 2008; Taiwo et al., 2009; Vredenburgh, 2002). Exploring the implications of employee attitudes and cognitions toward their job in conjunction with their view of their leader's style and the climate for safety can broaden the scholarly and industry understanding of what drives safety engagement and behaviors in the workplace. Although the sample population was that of food manufacturing employees, findings may

or may not be generalizable to other manufacturing jobs due to major differences in materials, operational procedures, and degree of hazards present. Therefore, future researchers can expand this study by using other manufacturing sectors to test the variables.

Limitations

The major limitation to this study was that causality could not be determined because of the non-experimental nature of the study. Therefore, I could only examine the relationships between the variables. Future experimental research based on the findings is needed to establish the viability of the variables on safety outcomes of employees. The boundaries of the hypotheses presented additional limitations, as factors extraneous to the variables may have affected the impact of the independent and mediating variables on the dependent variable. These extraneous variables may have included cultural norms based on geographic region, time in the workforce, tenure in working in food manufacturing, and career background of the participant. The instruments may have failed to capture an overall measure of leadership style or safety climate because of participant bias such as recency. Further, the data was collected onsite at the employee-participant's facility, potentially affecting their level of trust regarding the confidentiality of their responses. Given the data was self-reported, participants may have reported personal injury data inaccurately due to a desire to present themselves positively, a fear of management finding they did not report an injury, or a memory failure about incurring an injury.

Significance of the Study

This research was instrumental in partially filling the gap regarding what leads to positive safety outcomes by showing how PE relates to leadership and safety climate. Workplaces in the United States strive each year to put in place policies, programs, and training to contribute to safe outcomes for their employees.

Summary

Knowledge and understanding of the factors that influence safety outcomes can be beneficial to organizations, employees, and taxpayers. Organizational leaders can use this understanding when designing human resources programs, policies, procedures, and training and development initiatives to promote the factors that can lead to a reduction in workplace injury. While previous researchers have examined the role of the leader, the perception of safety climate, and such contextual factors as shift, tenure, and age, none have examined the cognitive attitudes of employees with respect to their perceived PE as it relates to leadership style and safety climate. My study thus adds to the base of knowledge on injury reduction and elimination. Chapter 2 includes a review of literature regarding the factors of leadership, safety climate, and PE. In Chapter 3, I present the quantitative methodology I used including the population and sampling method, discuss the instruments I used to gather data and the data collection plan, and explain potential threats to validity, and ethical considerations. Chapter 4 includes the results of the collected data, and Chapter 5 includes my interpretations of the data, a discussion of the implications of the results, and recommendations for future research.

Chapter 2: Literature Review

Overview

Since the inception of the Occupational Safety and Health Act of 1970, there has been a reduction in the number of employee injury and illness accidents across United States-based employers (OSHA, 2016). Workplace safety outcomes can impact the quality of life of the employee, co-workers, the employee's family, and the profits and sustainability of the organization (The National Institute for Occupational Safety and Health, 2015). Many factors can impact the employee's willingness and ability to be safe in the workplace, and researchers have connected safety outcomes to various demographic and environmental factors (Folkard, 2008; Taiwo et al., 2009), management practices (Vredenburgh, 2002), and leadership factors (Clarke, 2013). However, workplace injuries continue to occur at an unacceptably high rate (Bureau of Labor Statistics, 2016a). Further, safety incidents within the food manufacturing sector provide the third highest OSHA recordable case rate out of 21 manufacturing categories (Bureau of Labor Statistics, 2015). The purpose of this research was to explore the safety outcome implications of the cognitive state of the employee in relation to direct supervisor leadership style and organizational-level safety climate.

The ensuing review of literature encompasses research covering key areas (leadership, safety climate, and PE) where safety outcomes can be impacted from a systems perspective. Leadership is broadly discussed followed by a narrower discussion on the style of transformational leadership as it relates to safety climate and PE. I then review the evolution of the construct of safety climate, including a comprehensive

definition and a discussion of its connections to leadership and PE. Finally, I discuss the construct of PE in relation to employee motivation and organizational outcomes.

Literature Search Strategy

I searched several databases to gather materials for the literature review. These included PsycArticles, Academic Search Complete, Business Source Complete, SAGE Knowledge Encyclopedias, Science Direct, SAGE Journals, and ProQuest. Keywords included *empowerment, psychological empowerment, safety, industrial safety, workplace safety, occupational safety, safety outcomes, leadership, climate, organizational climate, safety climate, safety perceptions, leadership, safety leadership, transformational leadership,* and *supervision.* In the search, I targeted mainly peer-reviewed journal articles with publication dates extending across the three previous decades of research. My rationale for this span of publication dates was based on the fact that there was a limited number of works published the area of workplace safety.

Information on industrial workplace statistics was sourced via the online websites of the Bureau of Labor Statistics and OSHA. Upon accessing each website, I accessed and reviewed reports with the most current data. Using the Google search engine, I also accessed the Economic Policy Institute website for information on injury costs.

Leadership

The success of an organization results from its ability to effectively meet its objectives toward a vision and mission (Taiwo, Agwu, & Lawal, 2016). A primary means to this end is leaders who will engage in the necessary behaviors to motivate employees (Nedovic, Sudaric, & Ivankovic, 2013). Not necessarily a specific role in an organization,

leadership can be displayed from any level, including line managers as they attempt to influence employees to work toward established goals. Though leadership is often thought of as a one-way process in which the leader uses power to influence others toward a common mission, consideration must also be given to follower's role in the influencer-to-results equation (Uhl-Bien, Riggo, Lowe, & Carsten, 2013). The study of leadership has shown a positive influence toward task and contextual performance of employees and in affecting employee attitudes and motivations regarding their engaging in job duties (Wang, Oh, Courtright, & Colbert, 2011). With effective leadership, followers are more apt to accept their roles as followers, thereby enabling business strategies to be properly executed and organizational goals met.

Evolution of Leadership Theory

Scholars have been working to define and understand the concept of leadership since the times of Confucius and Plato (Goethals, Sorenson, & Burns, 2004). In the 1800s, leadership was considered to be an attribute of rich and powerful people such as royalty, military leaders, politicians, and rulers of countries (Yammarino, 2013). The 1900s began the era in which scholars formally contemplated and investigated the phenomena of leadership, starting with trait theory (Gregoire & Arendt, 2014). Attempts to advance understanding of leadership continued into the 1970s as scholars variously defined it in terms of traits, behaviors, or situations and emphasized that leaders' interactions with followers took place at the group level rather than the individual level (Goethals, Sorenson, & Burns, 2004; Yammarino, 2013). Consideration of a dyadic interaction between the leader and each specific individual surfaced in the 1970s, which

led to research on the concepts of transformational and transactional leadership styles and on various substitutes for leadership including the implications of the role of the follower (Uhl-Bien, Riggo, Lowe, Carsten, 2013; Yammarino, 2013).

Defining Leadership

The history of the study of leadership has evolved over centuries, and scholars have been keenly interested in adequately defining it. Definitions produced over the course of the past century have centered on various factors including traits, behaviors, processes, relationships, and emotions, which have led to a variety of approaches and theories but no consensus as to one definition of leadership (Chemers, 2002; Goethals, Sorenson, & Burns, 2004; Gregoire & Arendt, 2014).

Interest in determining a definition of leadership from a global perspective led 180 researchers spanning 62 cultures to settle on the definition as, "the ability of an individual to influence, motivate, and enable others to contribute toward the effectiveness and success of the organizations of which they are members" (House, Hanges, Javidan, & Dorfman, 2002, p. 5). Considering the nature of leadership as one where a specific individual can engage others to think, act, and behave toward a certain goal, Chemers (2002) defined leadership as, "a process of social influence in which one person is able to enlist the aid and support of others in the accomplishment of a common task" (p. 1). Chemers' definition implies an interactive role of exchange between the leader and the follower toward a common goal (Goethals, Sorenson, & Burns, 2004; Yammarino, 2013).

Leadership cannot be adequately defined without considering the role of the follower in accepting the influence of the leader's ideas and directives (Uhl-Bien, Riggo,

Lowe, Carsten, 2013). People will embrace a person who rises to accept an authority role provided their values are in alignment. After a follower determines their worth to the leader, their emotions lead them to succumb to the leader's influence (Goethals, Sorenson, & Burns, 2004). Although once thought of as a group-level dynamic, leadership has been shown to be applicable at the individual, dyadic, and group levels (Yammarino, 2013). Thus, despite no universally agreed upon definition of leadership, Yammarino (2013) suggested a robust definition encompassing the various aspects of the leadership equation as "a multi-level (person, dyad, group, collective) leader-follower interaction process that occurs in a particular situation (context) where a leader (e.g., superior, supervisor) and followers (e.g., subordinates, direct reports) share a purpose (vision, mission) and jointly accomplish things (e.g., goals, objectives, tasks) willingly (without coercion)" (p. 150).

Models of Leadership

In addition to interest in defining leadership over the past 100 years, organizational researchers have pursued developing an approach or model that leaders can use to fulfill their mission (Yammarino, 2013). Departing from the era where leadership was viewed in terms of traits or intellect, researchers in the 1960s began to investigate the behavioral factors that characterize leadership (Antonakis, Cianciolo, & Sternberg, 2004; Goethals, Sorenson, & Burns, 2004; Gregoire & Arendt, 2014). For instance, Blake and Mouton (1975) extended research on the hypothesis that leadership is a function of the leader's propensity to focus on production or people. They asserted that managers have varying levels of both intellectual and behavioral factors; however, the

approach they take in leading subordinates is based on which factor is most dominant in their style (Blake & Mouton, 1967).

Subsequent reserchers began to consider situational and contingency factors that can impact the leader's ability to influence (Gregoire & Arendt, 2014; Yukl, 2013). This strand of leadership research was based on the realization that the roles of the leader and the follower are not unidirectional but are interconnected with both being impacted by each other based on their respective knowledge, skills, and abilities (Yammarino, 2013).

Fiedler's contingency theory was the first theory to include consideration of both the leader and the follower. Fielder held that the leader will make adjustments to their style of leadership within the confines of their personal ability to do so and based on factors in the work environment (Goethals, Sorenson, & Burns, 2004; Yukl, 2013). A major contribution arising from Fielder's work was the model of least preferred co-worker (LPC). The premise of LPC is that the leader will interact with subordinates from a relational or task orientation based on how they esteem the subordinate they least prefer in their group (Fiedler, 1970).

Another prominent model at this time was Hersey and Blanchard's situational leadership model (Gregoire & Arendt, 2014). Based on the premise that the leader's approach is dictated by the maturity of the follower in terms of their readiness and willingness to engage in their responsibilities, the leader makes adjustments to their style to influence behaviors and motivations of the follower (Hersey, Blanchard, & Natemeyer, 1979). According to this model, emphasis is on the subordinate with the leader adjusting the amount of relational versus task-oriented direction they provide. The motivational

state of subordinates is not static; rather, their performance and drive are subject to change based on changes in the work (Hersey, Blanchard, & Natemeyer, 1979). Thus, the leader must be able to flex the amount of support and direction across the four influencing dimensions of telling, selling, participating, and delegating in order to achieve organizational results through the performance of the subordinate (Hersey, Blanchard, & Natemeyer, 1979).

Interest in understanding the leader-follower relationship beyond the matter of exchange prompted Burns (1978) to theorize an alternative style centered on inspiring and motivating followers to higher levels of performance and achievement, thus spurring the advent of the transformational leadership model (Goethals, Sorenson, & Burns, 2004; Yukl, 1999). Building on this work, Bass outlined four dimensions of the transformational leadership model: charisma (later defined as idealized influence), inspiration, intellectual stimulation, and individualized consideration (Avolio, Bass, & Jung, 1999; Bass, 1999; Goethals, Sorenson, & Burns, 2004; van Knippenberg & Sitkin, 2013).

Bass contended that leaders have a blend of transactional and transformational leadership abilities, but tend to exercise one style more than the other (Bass, 1999). Rather than emphasizing the exchange of action for reward as in transactional leadership, transformational leaders provide inspiration to followers, which leads them to work beyond their self-interested capacity to achieve higher-level goals that will benefit themselves and their group (Bass, 1999). Transformational leadership drives followers to move beyond mere compliance by encouraging them to examine issues, question the

status quo, provide suggestions, and take risks to create improvements in processes (Wang, Oh, Courtright, & Colbert, 2011).

A meta-analytic review of the effects of transformational leadership on performance spanning 1,113 studies showed a positive relationship between transformational leadership and general, task, contextual, and creative performance (Wang, Oh, Courtright, & Colbert, 2011). This review illustrated how the transformational leadership style positively impacts follower attitudes and motivations to not only achieve base-line performance, but also to extend beyond to reach extraordinary results (Wang, Oh, Courtright, & Colbert, 2011). However, research on the effects of transformational leadership extends beyond mere attitudes and performance in the generic sense. A search of the term *transformational leadership* on Google Scholar netted approximately 226,000 studies involving transformational leadership. What follows are a sampling of studies of the specific variables related to this study: transformational leadership, PE, and safety climate.

Transformational Leadership and Psychological Empowerment

A defining characteristic of the transformational leadership model is that of individualized consideration which is believed to be the factor that moves a leader from thinking merely about their own agendas and needs to contemplation of their behaviors from a moral standpoint (Avolio & Bass, 1995). This ‘transforming’ mindset provides a sense of autonomy and empowerment to the follower, thereby soliciting a sense of meaning toward their work developing greater levels of competence toward follower performance (Avolio & Bass, 1995; Spreitzer, 1995b). Having a leader who creates a

vision that allows for the follower's realization that their work has meaning while unleashing their autonomy toward performance has been shown to be a conduit to overall engagement (De Villiers & Stander, 2011). Furthermore, an empowering leadership style, such as transformational leadership, can result in the emergence of a sense of empowerment and meaning in the follower's perception of work as was shown across a group of Israeli Defense Force infantryman (Dvir et al., 2002).

Leveraging this sense of PE prompted by a transformational leader can lead to employee willingness and desire to bring about positive organizational outcomes through a mediating effect (Applebaum et al., 2015). In a study conducted in Hong Kong, 266 Chinese call center employees reported job satisfaction, organizational commitment, organizational citizenship behaviors, and in-role behaviors through the mediating effects of PE (Fong & Snape, 2015).

Menon (2001) suggested that PE is a cognitive state determined by the individual, similar to the implications made by Spreitzer (1995a; Thomas & Velthouse, 1990) and therefore, the follower owns the decision of when and why to act on the desires of leadership. Therefore, the desired effects of leadership will not take place unless the follower is psychologically empowered. This implied reciprocal relationship was shown to bring about employee creativity among a group of professional Chinese information technology workers as leader encouragement served as a moderator (Zhang & Barton, 2010). A mediating effect of PE on transformational leadership showed a significant relationship across a group of 427 Korean Fortune Global 100 employees' report of career satisfaction (Joo & Lim, 2013).

The hierarchical role of the transformational leader can have a different implication on the follower's organizational commitment depending on whether the relationship is direct or indirect in nature (Avolio et al., 2004). A study of 520 nurses showed that PE mediated between the two variables. However, the impact was stronger for an indirect relationship than a direct relationship between leader and employee (Avolio et al., 2004). The suggestion is that the proximity of the immediate leader to the employee in the organizational structure allows the employee to identify any inconsistencies between supervisor verbalizations and actions, whereas exposure to upper leadership prevents the ability to make this type of connection (Avolio et al., 2004). However, the transformational leadership attributes of individualized consideration, inspiring, influence, and intellectual stimulation encourage employee autonomy and increase PE when they come from the immediate supervisor (Avolio, Bass, & Jung, 1999; Bass, 1999; Goethals, Sorenson, & Burns, 2004; van Knippenberg & Sitkin, 2013). Further evidence of employee opinion of their supervisor based on the engagement in transformational leadership was demonstrated in a study of two groups of customer service employees: one from India and one from Canada (Gill et al., 2010). In terms of power distance, India is higher and Canada lower, however, the research showed that both groups of employees deemed power distance an irrelevant factor and that the use of transformational leadership by the immediate supervisor invoked their perception of empowerment (Gill et al., 2010).

Transformational Leadership and Occupational Safety

Leadership style has been shown to have an influence on employee perceptions of safety climate and safety outcomes (Nielsen et al., 2016). Through a two-stage study of 683 Norwegian offshore workers, both constructive and destructive forms of leadership styles were assessed. Data was collected at the onset of the study and six months later. This study concluded that constructive leadership was correlated positively with employee opinions of safety at both points in time whereas destructive leadership only had a correlation at the initial timing of the study. Additionally, findings showed that the way a leader attended to the issue of safety had an impact on the how the employee viewed that leader indicating a reciprocal relationship between leadership and the matter of safety (Nielsen et al., 2016). This premise of exchange aligns with previous research using 1,723 employees from a Big Box retailer showing that a supervisor's demonstration of concern for safety was reciprocated through employee's engaging in safety behaviors (DeJoy, et al., 2010).

Leaders have the ability to influence employees positively toward safety goals and outcomes by promoting a relationship of trust, modeling behaviors, bringing focus to objectives, providing support, and sharing a vision. Each of these are factors coinciding with the transformational leadership style (Barling et al., 2002; Luria & Morag, 2012). To assess the implications of these factors, Luria and Morag (2012), studied 1,697 managers and employees of an Israeli semiconductor facility over a three-year period who engaged in the practices of Safety Management by Walking Around (SMBWA). This process was

shown to promote interaction between leaders and the employees in a reciprocating relationship resulting in improved safety behaviors on the part of the employees.

Although the process of exchange has shown positive outcomes toward safety behaviors, the impetus for the employee to go above and beyond expectations toward goals is inspired by transformational leaders as they influence through vision and consideration of the individual (Avolio, Bass & Jung, 1999). The transformational leadership style can stimulate the cognitive and behavioral aspects of the employee by encouraging employees to question the status quo, allowing them to exercise courage in confronting safety issues through taking positive initiative toward safety, and promoting information sharing regarding risks in the environment (Barling et al., 2002).

In an attempt to validate the ability of the transformational leader to elicit the cognitive factor of conscientiousness toward safety, two studies were conducted. One surveyed 174 college fast food workers and the other surveyed 164 employees from a variety of industries. Findings indicated that transformational leadership prompted safety consciousness which predicted safety climate perceptions and led to safety outcomes (Barling et al., 2002). Contrary to this finding, a study of 1,033 employees and 78 managers from a total of 78 Dutch warehouses found no evidence of a relationship between conscientiousness, transformational leadership, and safety outcomes (de Koster et al., 2011). However, a longitudinal study of 800 Swedish forest industry employees explored the implications of training supervisors in transformational leadership regarding employee safety and productivity. Findings revealed that leader training was effective at improving employee attitudes toward safety without diminishing the importance of

productivity thereby negating the findings of de Koster, et al. (2011; von Thiele, Schwarz, Hasson, & Tafvelin, 2016).

Workplace safety is comprised of safety participation and safety compliance which are driven cognitively through employee perceptions of safety climate. Through a meta-analysis comprised of 32 studies assessing the relationship of leadership to safety related variables such as adherence to rules, wearing personal protective equipment, participation in safety initiatives, and monitoring co-worker safety, Clarke (2013) found a significant positive association between the transformational leadership style and both employees' perceived safety climate ($\rho = .48$, $p < .05$) and safety participation ($\rho = .44$, $p < .05$). This analysis revealed that employee compliance to safety directives is driven mainly by the transactional style of leadership with the transformational style being directly related to the safety participation (Clarke, 2013). Providing individualized consideration in explaining policies and procedures is a transformational leadership factor that leads to employee perception of positive safety climate (Zohar & Luria,2004). However, it is through the inspirational influence of the leader that employee participation in safety is gained, as validated in study of 267 full time Australian participants (Griffin & Hu, 2013).

Safety Climate

Organizational climate is a measure of how employees experience the workplace from a psychological standpoint and can influence workplace factors such as employee level of productivity, satisfaction, or decision to remain with or leave an organization (Jex & Britt, 2014; Rogelberg, 2007). Understanding the drivers of employee outcomes is

vital to the sustainability of an organization. Often confused with the measure of organizational culture, climate is a measure of the perceptions of how employees experience the values, beliefs, and norms of their work environment (Verbeke, Volgering, & Hessels, 1998). Comprehension of climate perceptions can aid in developing strategic measures that can impact workplace outcomes positively thereby enabling the attainment of organizational objectives (Schneider, Erhhart, & Macey, 2011).

Evolution of Climate Research

Lewin's early work on leadership styles served as a main stimulus to the progressive research on the concept of organizational climate (as cited in Schneider, Ehrhart, & Macey, 2011). Evolutionary work regarding this construct continued in the 1960s with Katz and Kahn's exploration of employee perceptions of the workplace (as cited in Schneider, Ehrhart, & Macey, 2011), McGregor's (1960) Theories X and Y of managerial dispositions, and Schein's (1990) work on organizational culture. Historically, climate studies of the 1960s and 1970s morphed into studies of organizational culture; however, the 1990s saw renewed interest in the construct of climate as it related to understanding the employee perceptions of the work environment (Schneider, Ehrhart, & Macey, 2013).

Defining Safety Climate

Literature has, at times, used the concept of climate interchangeably with the concept of culture (Rogelberg, 2007; Schneider, Ehrhart, & Macey, 2013). However, the two terms have been found to be distinctly different constructs. Organizational culture is

a measure based on the shared values, assumptions, and beliefs regarding the work environment which is the force behind climate (Jex & Britt, 2014; Schneider, Ehrhart, & Macey, 2013). Climate is defined as the experiences individuals have in the workplace related to how values, assumptions, and beliefs are put into action through application and enactment of policies, procedures, and processes (Schneider, Ehrhart, & Macey, 2013). Campbell, Dunnette, Lawler, and Weick (1970) identified four dimensions that comprise a measure of organizational climate: autonomy, degree of imposed structure, reward orientation, and the implications of consideration, warmth, and support (p. 413). However, James and Jones (1974) expressed that the number of factors that can comprise the construct of organizational climate is broader than these dimensions. They proposed organizational climate should be thought of in terms of the situation and the particular variables of organizational climate that can impact the performance or attitudes of employees.

In the quest to bring about clarity of the meaning of organizational climate, James and Jones (1974) explored three approaches: the multiple measurement-organizational approach, the perceptual measurements-organizational attribute approach, and the perceptual measurement-individual attribute approach. Each of these approaches attempt to measure climate with a different emphasis: as a measure of a set of organizational characteristics, as a measure of employee perceptions of the organizational characteristics, or as perceptions that culminate from the various attributes of the individual and their intersection with the environmental situational factors, respectively (James & Jones, 1974). This combination can be thought of in terms of being the

overarching construct of organizational climate referred to as ‘molar climate’ (Jex & Britt, 2014) and can be defined as “…the meanings people attach to interrelated bundles of experiences they have at work” (Schneider, Ehrhart, & Macey, 2013, p. 361). Categorizing organizational climate by measuring specific organizational outcomes such as empowerment, innovation, creativity, service, productivity, or safety lead to micro climate measures strategically focused in those particular areas (Jex & Britt, 2014; Schneider, Ehrhart, & Macey, 2011).

Similar to the *perceptual measurement-individual approach*, climate is a measure represented though the shared perceptions of employees and based on how they interpret their individualized experiences in the environment (Jex & Britt, 2014; James & Jones, 1974). The interpretation of the experiences is based on how “policies, practices, and procedures are rewarded, supported, and expended” and culminates into an evaluation of climate (Rogelberg, 2007, p. 1). To some extent, this perception can be related merely to the how justice is perceived by employees with respect to how management administers these elements (Gyekye & Haybatollahj, 2014; Zohar, 2000). However, a realistic interpretation of climate exceeds this perception as it involves not just an issue of fairness, but the actual manner in which leadership consistently administers and follows prescribed policies, procedures, and processes in a specific operational area (Zohar, 2010). As a main strategic climate area of study, research has shown safety climate is valuable to understanding the incidence of workplace accidents and injuries (Christian et al., 2009; Clarke, 2006; Jex & Britt, 2014; Schneider, Ehrhart, & Macey, 2013).

One measure of safety climate is based on the shared perceptions of employees regarding the way safety is practiced and enforced in the organization. However, there has been some debate as to how to properly define safety climate (Cooper & Phillips, 2004; Griffin & Curcuruto, 2016). A meta-analysis covering 30 years of safety climate research identified 20 empirically tested scales for safety climate involving 50 different variables and themes (Zohar, 2010). The ambiguity this presented in climate research provided a compelling reason to more narrowly define types of climate, to include that of safety climate (Zohar, 2010). Griffin and Curcuruto (2016) claim safety climate is the manifestation of how individuals derive sense from the normative manner in which the values and beliefs of the safety culture are interpreted and put into action. This interpretation is based on the relationship and intersection of perceptual, collective, and multidimensional phenomena derived from the environmental application of safety polices, practices, and procedures and serves as the impetus to driving safety-oriented behaviors (Griffin & Curcuruto, 2016). This coincides with Cooper's notion (2000) that regardless of management systems targeted at design of a safety environment, the perception of an environment is based on the individual's subjective interpretation of how a program of safety is actually administered. Consequently, safety behaviors are inclined to coincide with an employee's perceptual understanding of the value of safety per the safety climate (Luria & Yagil, 2010).

Measuring Safety Climate

Safety climate is one of the most studied strategic climate areas of the workplace in research literature (Jex & Britt, 2014; Schneider, Ehrhart, & Macey, 2013) and has

been shown to be a predictive measure of workplace safety incidents (Kvalheim, Antonsen, & Haugen, 2016; Neal, Griffin, & Hart, 2000). Flin, Mearns, O'Connor, and Bryden (2000) have proposed that safety has generally been measured using lagging indicators or 'feedback' systems such as OSHA reportable incident rates (Cooper & Phillips, 2004), but has been moving toward a 'feedforward' system that is a more proactive approach in deterring workplace injuries. A literature review of 18 published safety reports aimed at comparing safety climate instruments identified a vast range of measurement instruments across multiple business sectors covering many themes including management, safety systems, risk, competence, procedures, and work pressure used to measure safety climate (Flin et al., 2000). The difference between the various instruments is largely based on the variety of factors used to measure safety climate and the lack of established validity of many instruments with respect to measuring the independent variables as they correlate to measures of accident rate or safety performance (Cooper & Phillips, 2004).

A preeminent researcher of safety climate who is believed to have developed the only instrument capable of measuring safety climate that is viable in the prediction of and sustainability of safety behaviors is Dov Zohar (Cooper & Phillips, 2004). Tested across manufacturing workers spanning 20 randomly selected factories, Zohar's original instrument was comprised of 40 items and found that the role of management commitment to safety was of major importance to the way employees perceived the safety climate (Zohar, 1980). Individuals interpret the climate based on their analysis of workplace safety issues, safety behaviors of the group, and how discipline toward safety

is applied. Interpretations are also devised through observation of work group and organizational level factors such as supervisory actions, provided safety training, and the expressed value of safety toward the work group (Luria & Yagil, 2010). Safety climate is defined through an individual's perception of safety culture measured at a particular point in time, and thus subject to change (Kvalheim, Anotonsen, & Haugen, 2016; Zohar, 1980).

Employee attitudes about safety are developed across three levels of perceptions: organizational, work group, and individual (Luria & Yagil, 2010; Zohar, 2010). Research has posed questions as to the level at which employee perception of safety climate should be measured: group or organizational level (Huang et al., 2013; Zohar & Luria, 2005; Zohar, 2008). The organizational level measures perceptions of the established policies and procedures whereas the group level measures perceptions of how well the supervisory level centers on applying and enforcing the policies and procedures (Zohar, 2000; Zohar, 2008). Zohar's Organization-Level Safety Climate Questionnaire encompasses three content themes used to collect the employee's perceptions of the implementation and prioritization of safety practices, policies, and procedures from the organizational level (Zohar & Luria, 2005; Smith, Huang, Ho, & Chen, 2006). The three content areas measure active practices such as monitoring and enforcing, proactive practices such as learning and development, and declarative practices such as declaring and informing of safety practices. (Zohar & Luria, 2005). Although the Organization-Level Questionnaire focuses on the high-level design, development, and analytics for the organization safety program, Zohar's Group-Level Safety Climate Questionnaire's

themes relate more to the supervisory level administration of the program. Supervisors administer and control the various content areas of measuring active practices in monitoring and controlling, engaging in proactive practices, instructing and guiding, and in declaring and informing (Zohar, 2000; Zohar & Luria, 2005; Clarke, 2010). Comparing the two levels, both measure safety climate with very similar results and similar validities ($\alpha = .92$ for the organizational level and $\alpha = .95$ for the group level; Zohar & Luria, 2005). The difference between them is the focal point of the administration (i.e. group-level is based on supervisor actions in driving safety; organizational-level is based on the overall design features of the safety program) (Zohar & Luria, 2005). The Organizational-Level Questionnaire was used in this reserch to measure employee perception of the value the organization has on safety at the top leadership level.

A consideration in assessing safety climate is the reliance on employee perceptions of the how policies, procedures, and processes are administered in conjunction with certain environmental factors (Zohar, Huang, Lee, & Robertson, 2015; Smith, Huang, Ho, & Chen, 2006). Clarke (2006) reviewed 32 studies of safety climate finding a significant correlation between safety climate and safety performance and participation, and between safety performance and involvement in accidents. Although she preliminarily found the correlation between safety climate and accidents as positive, further review of the research showed poor validity generalization due to the wide variety of industries included in this meta-analysis (Clarke, 2006). DeJoy et al. (2004) found the degree of perceived hazards and risks in the work environment can influence the opinions

employee have in their evaluation of safety climate which can impact their decisions to engage in the task (Zohar, 2014; Zohar, Huang, Lee, & Robertson, 2015). Because different industries have different levels of risks and hazards, measuring safety climate across many industries can provide skewed understanding of its relationship with safety outcomes. For example, safety climate surveys spanning 33 companies comprised of 12 different industries found a significant variance in safety climate scores associated with safety outcomes (Smith, Huang, Ho, & Chen, 2006). Thus, measuring safety climate within a single industry can help control for the variability that may exist through simultaneously assessing differing industries and thereby provide a more accurate understanding of the relationship between safety climate and safety outcomes (Smith, Huang, Ho, & Chen, 2006)

Zohar's safety climate questionnaire has been used at the group and organizational levels and have established that safety climate is positively related to safety behaviors at both levels (Cooper & Phillips, 2004; Johnson, 2007; Zohar & Luria, 2005). One in the same with the original questionnaire (Zohar, 1980) the group-level questionnaire (Zohar, 2000) was used with 540 employees from a packaging plant and repeated one year later. Findings showed similar results across both time periods; the definition of safety climate is determined on how safety administration is operationalized across the organization rather than as applied on the individual level and safety climate is directly connected to safety behaviors (Cooper & Phillips, 2004).

Further findings of reliability and validity of Zohar's questionnaire were found when Johnson (2007) surveyed 292 employees at three locations of a heavy

manufacturing organization using the original, or group level, Zohar Safety Climate Questionnaire. In this research, the questionnaire was initially administered and then five months later post-survey injury data was reviewed to identify whether there was a relationship between the survey responses and actual workplace injuries. The questionnaire was found to be psychometrically reliable and valid and the results revealed a significant correlation between safety climate and safe behaviors. It was further found that the severity of the injury could be predicted by the measure of safety climate (Johnson, 2007).

Safety Climate's Relationship to Psychological Factors

The mission of understanding the relationship between safety climate and outcomes can be traced to the early work of Zohar (1980) who proposed that safety climate is a solid antecedent to safety outcomes and applicable across industries and countries (Zohar, 2014). Defined as "shared employee perceptions about the relative importance of safe conduct and occupational behavior" (Zohar, 1980, p. 96), the viewpoints of employees have been shown to lead to safety outcomes defined as accidents, injuries, participation, and compliance (Clarke, 2006, Neal & Griffin, 2006; Neal, Griffin, & Hart, 2000; Griffin & Curcuruto, 2016). Leitáo and Greiner (2016) conducted a review of 17 studies finding that 15 of them fully or partially linked safety climate with accident and injury rates. However, in a study of 51,083 Norwegian oil and gas industry employees, the prediction capability of safety climate towards major accidents was mixed (Kvalheim, Antonsen, & Haugen, 2016) coinciding with the claim

there is still some ambiguity in the causation of accidents and injuries as they relate to the measure of safety climate (Leitáo & Greiner, 2016).

The measure of safety climate is generally applied at the group level. However, the group level measure is merely an aggregate measure of individual attitudes of how their role is influenced by organizational administration of safety policies, procedures, and initiatives (Zohar, Huang, Lee, & Robertson, 2015; Zohar & Luria, 2005). The measure of safety climate has been recognized as a distal factor in leading employees to engage in safety behaviors; however, individual factors have been deemed as proximal factors of safety behavior engagement (Griffin & Curcuruto, 2016). This gives credence to the importance of the person's psychological disposition toward safety outcomes as they interpret the safety climate and then choose to act in accordance with safety expectations (Griffin & Curcuruto, 2016).

A meta-analysis of 90 studies of situation- and person-related factors that lead to safety outcomes showed that a person's safety motivation leads to safety performance as measured by accidents and injuries (Christian et al., 2009). Through her meta-analysis regarding the link between psychological climate, work attitudes, and safety outcomes, Clarke (2010) found partial mediation of work attitudes on the association between safety climate and safety behaviors.

The impetus to engage in safety behaviors has been shown to stem from interpretations of safety climate as found through 3,375 employees from 42 organizations (Liu, Huang, Huang, Wang, Xiao, & Chen, 2015). This interpretation was shown to be put into action based on perceived behavioral control as evidenced in a study of 356

European train company employees (Fugas, Silva, & Meliá, 2013). Research using 356 maintenance employees and drivers of a transportation company showed that individual beliefs and attitudes about safety climate are significant in leading to safety behaviors through behavioral control (Fugas et al., 2012). Further, a review of psychological factors from a sample of 327 chemical operators of a Northern Italy manufacturing company showed the psychological factors of perceived control, psychological ownership, felt responsibility, improvement orientation, and role-breath self-efficacy (confidence that one can perform safety processes beyond their particular role) were drivers of safety behaviors that can lead to a reduction in engagement in risky safety behaviors (Curcuruto, Mearns, & Mariani, 2016, p. 147).

Safety Climate's Relationship to Leadership

Zohar (2000) established multiple levels in defining safety climate. The organizational level is concerned with the setting of policies and procedures and the supervisory level is concerned with implementation and execution of such (Zohar, 2000). In his study of 534 metal-processing factory employees, Zohar discovered that the role and actions toward driving safety initiatives is unique to the supervisor. Employees, as a work group, evaluate the supervisor's unique initiative toward driving safety policies, procedures, and processes exclusive of the organization's role in setting policy (Zohar, 2000). Through an archival review of research studies encompassing organizational safety climate, accident reporting, and supervisor enforcement covering 33 companies from diverse industries and 1,238 employees, a distinction was found between

organizational-level safety climate and the role of supervisors in enforcing safety practices (Probst, 2015).

Supervisor commitment to safety initiatives along with enforcement can be a robust conduit to the measure of safety climate as evidenced through a survey of 321 employees from three Australian organizations focused on driver safety (Wills, Biggs, & Watson, 2005). Not only have supervisory behaviors been shown as positive influences of safety outcomes, employees assess their supervisor's attitude toward safety initiatives in formulating their own safety attitudes and in performing work tasks (Fogarty & Shaw, 2010). A study of 308 Australian Defense Force maintenance employees comprised of civilian and military components found that the employee's perception of the supervisor's attitude toward safety influenced general employee safety attitudes as well as intent-to-violate and actual violations of safety protocols (Fogarty & Shaw, 2010).

A disconnect can be formed regarding employee perceived safety climate based on how the supervisor balances various focal areas of the operation that compete with safety initiatives such as productivity, quality, profitability, and other operational factors (Zohar, 2014). Employees determine the organization's value of safety management and procedures as they discriminate between what the organization deems as a priority in getting the work done in conjunction with their personal view of what is important with respect to competing initiatives (Zohar, 2008). They will defer to their supervisor in learning how to determine the correct decisions toward safety in the face of competing demands. For example, they will weigh the importance of safety in the event of lagging production where removal of a safety guard could speed up production to meet goals

(Zohar, 2008). The congruence between the organizational priority expressed by the supervisor and their actions toward instilling proper safety practices with discipline aid in employee sense-making and perception of the supervisor's concern for employee welfare (Zohar, 2010). This perception of the supervisor's concern for the safety of the employee can influence the employee's perception of safety climate as they learn to identify the supervisor's mode of action in attending to safety priorities.

A study of 2,024 infantry soldiers and their commanders revealed that the degree of clear and consistent application of safety expectations dictates the level of perceived safety climate. This is partially due to the development of leader-member exchange that takes place in garnering this understanding of safety expectations (Zohar & Luria, 2004). This relational level with one's supervisor has been associated with an employee's attitudes and perceptions about safety as evidenced by a study of 90 employees comprised of temporary and regular workers in various manufacturing organizations. Findings revealed that temporary workers regarded safety based on personal safety and the value of engaging in safety practices; regular employees considered safety from the group level based on supervisor practices and their perceived value of safety with respect to the group (Luria & Yagil, 2010). The difference can be related to the level of belonging and attachment the employee feels due to being a temporary or a regular employee. Temporary employees have not built a relationship with the supervisor to understand safety practices and expectations (Luria & Yagil, 2010); thus, "shared employee perceptions about the relative importance of safety conduct in their occupational behavior" had not materialized (Zohar, 1980, p. 96).

Psychological Empowerment

The ability to inspire motivation of an employee toward reaching organizational goals and objectives is vital to the success of the organization. For several decades, researchers and theorists have been searching for the key elements that can lead to motivation of employees. One such element that has been considered motivational and a main conduit to managerial and organizational effectiveness is that of empowerment (Conger & Kanungo, 1988; Thomas & Velthouse, 1990).

The construct of empowerment has an evolutionary history that can be linked to Lewin's work on employee involvement and participation (1947 as cited in Maynard et al., 2012); Herzberg's work on job enrichment (1966 as cited in Anderson, Ones, & Sinangil, 2001); job characteristics (Hackman & Oldham, 1976; Spreitzer, DeJanasz, & Quinn, 1997); participative decision making (Locke & Schweiger,1979); self-efficacy (Bandura, 1977, 1982); self-determination (Deci & Ryan, 1985), and job involvement (Lawler, 1988). In an effort to clarify the meaning of empowerment, Conger & Kanungo (1988), specified empowerment enhances the feelings of self-efficacy of subordinates by relinquishing power and control to them through delegation, decentralized decision making, and employee participation. Thomas and Velthouse (1990) extended the research contending that the condition of empowerment is not necessarily one of delegated power and control or allowance to participate in the work. It is more of an intrinsic, cognitive driver involving the personal choice to engage in the work. This choice is driven through the subordinate rationalizing the value and meaning of their performance regarding their assessment of the potential outcomes. Spreitzer (1995a) redefined the element of 'choice'

as ‘self-determination’ meaning “…. empowered individuals do not see their work situation as a “given” but rather something able to be shaped by their actions” (Spreitzer, 1992, p. 4 as cited in Spreitzer, DeJanasz, & Quinn, 1997).

Defining Psychological Empowerment: The Models

Empowerment has been thought of in terms of a social -structural context based on authority and responsibility and as the psychological context in terms of actual mental state of individual (Maynard, Gilson, & Mathieu, 2012; Rogelberg, 2007; Spreitzer, 2008). Although each context shares the main factors of power and control, the former centers more on the delegation of power from a leader to a subordinate through rules, policies, and practices (Maynard, Mathieu, Gilson, O’Boyle, & Cigularov, 2013) whereas the latter centers on the intrinsic, cognitive belief that one has the power to act in a self-determined manner (Gagné & Deci, 2005; Spreitzer, 1995a). The relational framework of the social-structural context is centered on the interdependent dynamic where a leader shares authority, information, decision making, and autonomy with subordinates thereby providing a sense of power, control, and self-efficacy within follower (Bandura, 1977; 1982; Conger & Kanungo, 1988; Fernandez & Moldogaziev, 2013; Koberg, Boss, Senjem, & Goodman, 1999; Rogelberg, 2007). However, the psychological context is viewed as an intrinsic motivational principle in which one affectively perceives the value of the initiative and acts from an internal psychological paradigm of control rather than through delegated control from leadership (Conger & Kanungo, 1988; Koberg, Boss, Senjem, & Goodman, 1999; Maynard, Gilson, & Mathieu, 2012; Spreitzer, 2008).

In an attempt to more robustly define PE as a usable measure for organizations to leverage, two significant models have emerged. Thomas and Velthouse (1990) proposed a model based on the work of Conger and Kanungo (1988) where they identified four dimensions: meaningfulness, competence, impact, and choice. This model posits that an individual's choice to engage in an activity is based on a balance of the degree management encourages participation with the individual's value and belief that the work has meaning, they are competent to do the work, and they can make an impact (Thomas & Velthouse, 1990). Spreitzer's examination of this model led her to adopt the elements of impact, meaning, and competence while adapting the element of choice to that of self-determination. The definition of self-determination broadens the ability of merely choosing to act to the ability to act autonomously, initiate actions, make decisions about how to do the work, and have personal control over the work (Maynard, Gilson, Mathieu, 2012; Spreitzer, 1995b).

Spreitzer's Model

Spreitzer asserts that PE is not a static state; it adjusts cognitively based on the degree the individual deems each of the four factors apply which influences their level of proactivity in work activities (Spreitzer, 1995b). Although the individual components can have variance in application on a unitary basis, according to Dust, Resick, and Mawritz (2014), "psychological empowerment is a comprehensive motivational process that embodies a self-expressive and intrinsically motivated orientation toward work" (p. 413). Spreitzer validated the comprehensive rationale of the four dimensions in a study using 393 managers from a Fortune 50 industrial organization and cross validated with 128

employees from an insurance company. Strong validity was found with four dimensions in aggregate as Cronbach alphas were .72 and .62, respectfully across the two studies (Spreitzer, 1995b). Although the aggregate measure is used to assess overall perceived empowerment on outcomes, it is important to understand the component's relationships to the overall measure to more clearly understand the model and how it facilitates behaviors.

The PE component of *meaning* is assigned based on one's assessment of the task, activity, or directive based on personal values, beliefs, and frames of reference which they weigh against calculated pros and cons of acting (James & James, 1989; Spreitzer, 1995b). "Judgements of personal efficacy affect choice of activities and selection of environments" and play a role in determining one's capability in performing with *competence* (Ozer & Bandura, 1990, p. 472; Spreitzer, 1995b). Thus, PE involves an active approach toward tasks through exercising personal control rather than one of merely enacting delegated authority from a leader (Liden, Wayne, & Sparrowe, 2000; Spreitzer, 1995a; Spreitzer, 1995b). Consistent with expectancy theory (Lawler & Suttle, 1973), an individual's decision to act can be influenced by their ability to influence an outcome of their performance; there is value in ability to make an *impact* (Spreitzer, 1995b; Thomas & Velthouse, 1990). The ability to act in an autonomous manner through personal choice leads to a sense of *self-determination* toward the decision to act (Deci & Ryan, 1985; Spreitzer, 1995b). In order to arrive at a state of PE, these components must operate in an additive manner; they are not mutually exclusive (Thomas & Velthouse, 1990). Each dimension may independently have a propensity to influence the affective

and performance aspects of the workplace, however, no single dimension is independently related to work outcomes – the dimensions must have a mutually interdependent relationship in order to be referred to as PE (Spreitzer et al., 1997).

Psychological Empowerment's Relationship to Organizational Outcomes

The ability to effect PE among employees has been shown to have positive outcomes leading to results that drive success for the organization. PE has intrapersonal, interactional, and behavioral facets that can impact the process of bringing about organizational outcomes (Zimmerman, 1995; Zimmerman, Israel, Schulz, & Checkoway, 1992). In prior research the focus was mainly on the behavioral component that resulted in outcomes. Viewed independently, the behavioral facet discounts the role and value of the intrapersonal facet which serves as the emotional drive that leads to outcomes (Aji, Yusof, Osman, & Yusop, 2010). Attitudes, belief in one's ability, and interpretation of the environment originate from the intrapersonal facet and serve as mediators between leader delegated power and subordinate outcomes by stimulating the behavioral component (Harrison, Newman, & Roth, 2006; Spreitzer, 1995a; Zimmerman, Israel, Schulz, & Checkoway, 1992). Outcomes of PE have been reviewed in terms of these facets and segregated into two main categories: attitudinal or behavioral outcomes (Seibert et al., 2011). A meta-analysis comprised of 142 articles determined that PE at the intrapersonal level has attitudinal outcomes to include job satisfaction, organizational commitment, reduced job-related strain, and turnover intentions. Examination of the literature on the behavioral aspect revealed behavioral consequences of PE included task performance, organizational citizenship behaviors, and innovation (Seibert et al., 2011).

Factors that define the work environment have been shown to contribute to the attitude of work engagement (Wang & Liu, 2015). Survey data collected from 218 nurses from two top Chinese hospitals examined the relationship between engagement, PE, and practice environment. Findings showed a significant positive relationship between practice environment and work engagement. However, it was the factor of PE that enhanced the perception of the practice environment that brought about the attitudes of work engagement (Wang & Liu, 2015).

Research conducted by de Klerk and Stander (2014) asserted that leadership empowerment behaviors could have an effect on employee perceptions and experiences in the work place. Through a survey of 322 manufacturing employees, research found that PE mediated the relationship between leadership empowerment behaviors and work engagement. In reviewing turnover intention of this group, a negative relationship between leadership empowerment behaviors and work engagement was determined through the mediating effect of PE (de Klerk & Stander, 2014). This evidences Spreitzer's belief that empowered individuals, through their individualized PE, have control and choice (self-determination) over the work environment (Spreitzer, DeJanasz, & Quinn, 1997).

Understanding that motivation manifests based on the discernment of individual's perception of the worth of their behavioral and psychological participation (Spreitzer, 1995a; Zimmerman, 1990), the relationships of leadership approachability, group effectiveness, job satisfaction, productivity, and turnover intent were examined (Koberg, Boss, Senjem, & Goodman, 1999). Findings showed that those with tenure and higher

stature in the organization's hierarchy have a sense of empowerment. They suggested this may be a result of time bringing about a sense of 'fit' in the organization. (Koberg et al., 1999). They contend that an environment with approachable leadership and good group dynamics leads to a sense of empowerment. Attitudes of increased job satisfaction and perceived job effectiveness along with a reduction in intent to quit were deduced from this research of 612 hospital employees (Koberg et al., 1999).

An examination of the impact of job resources on work engagement was conducted using a sample of 1,313 Chilean hospital staff. Findings showed that task autonomy, skill utilization, and social support from supervisors were significantly mediated by PE in arriving at an increased perception of an individual's work engagement (Quiñones, Van den Broeck, & De Witte, 2013). However, PE did not have a mediating effect on co-worker social support as it relates to work engagement. The contention in this finding was that the availability of various job resources can help an individual discover competencies that can be used on a personal level through evolving PE. The realization of the totality of resources serves at an elevated motivational level resulting in positive work engagement (Quiñones et al., 2013).

Actions that lead to behavioral outcomes are influenced to some degree by attitudes (Ajzen & Fishbein, 1977). The attitude-related outcomes of PE are related to the behavioral outcomes of PE as one engages in influencing the environment to bring about tangible results desired by an organization (Zimmerman et al., 1992). PE has been shown to be an effective mediator in garnering these results. For example, research was conducted on the relationship between high-performance-work-systems (HPWS), or

high-performance practices, and the outcome of quality of patient care. HPWS are comprised of various human resources practices and interactional dynamics of the work place (Bonias, Bartram, Leggat, & Stanton, 2010). A group of 541 Australian health service organization employees were surveyed. Findings revealed that PE mediated the relationship between HPWS and quality of patient care. Interestingly, examination of the four dimensions of PE, 'meaning', 'competence', 'impact', and 'self-determination', found that 'impact' failed to contribute to the mediating effect (Bonias et al., 2010). 'Impact' is based on the influence one has in various outcomes of work (Spreitzer, 1995b). Because this type of operation has a high level of specialization with patient care delivered from an integrated team, it is possible that the respondents simply could not identify where their individual impact leads to the quality of care of any given patient leaving the environment to serve as a surrogate for 'impact' (Bonias et al., 2010).

Two valued outcomes of organizations that help them to compete are the degree of innovativeness their firm can produce and how effective employees can be in performing their jobs. Spreitzer conducted a survey of the subordinates and leaders of 324 middle managers. The findings revealed that PE was mediated the relationship between the social structure of an organization and innovativeness by both sets of raters (Spreitzer, 1995a). However, the ratings of the leaders did not find a relationship between PE effectiveness of the middle manager (Spreitzer, 1995a). This study examined the implications of the subcomponents of social structure (role ambiguity, resource availability, culture, sociopolitical support, information accessibility) and found that PE erased the effect of culture on innovativeness while role ambiguity remained as a

predictor (Spreitzer, 1995a). This gives some validation to the precursor of the attitude effect, or intrapersonal level of empowerment, on the behavioral aspect that results in outcomes such as effectiveness and innovativeness (Spreitzer, 1995a; Zimmerman et al., 1992).

More recently, Li, Wei, Ren, and Di (2015) explored the relationship PE has on task, contextual, and innovative performance. Using a sample of 209 research and development team members and their supervisors, PE was found to have a positive and significant relationship with all three outcomes. Findings of this study also discovered a partial mediated effect of intrinsic motivation between PE and the various performance variables. The authors hypothesize that the implications of intrinsic motivation are not directly related to the measure of PE and that the intrinsic motivation of the individual can be manipulated to bring about better performance in lieu of and employee's level of PE (Li et al., 2015).

Researchers explored the relationship of attitudinal and behavioral outcomes of PE. A study of 291 Indian industrial managers from the pharmaceutical, engineering, IT, electronics, and aeronautics industries explored the role of PE on work engagement and turnover intention (Bhatnagar, 2012). The findings revealed that PE serves as a predictor of work engagement. Further, work engagement was related positively to innovation and negatively to turnover intentions (Bhatnagar, 2012). The outcome of innovativeness was found to result from the attitude of work engagement as predicted by the effects of PE. Similar to the findings of de Klerk and Stander (2014), it could be posited that PE's

influence on the attitudinal outcome of work engagement influences the behavioral outcome of innovation and subsequently lessens turnover intentions (Bhatnagar, 2012).

PE has been found to relate to the outcomes of satisfaction, loyalty, and task outcomes. This was found in a study of 617 employees of the China Petrochemical Corporation. (Yao, Chen, & Cai, 2013). The survey results lead to the assertion that PE serves as an influencer across all three variables but the variable of satisfaction partially mediated employee loyalty and their task performance validating the implications of the intrapersonal and behavioral effects of PE (Zimmerman et al., 1992).

Applying Leadership, Safety Climate, and PE to Systems Theory

The concept of systems theory is rooted in the early 20th century work of von Bertalanffy (1972) and has been built on by a variety of researchers since that time (Laszlo & Krippner, 1998). The basic premise of systems theory is that each of subcomponent is integrated with other subcomponents in an interdependent manner (Conners & Caple, 2005). According to Ackoff (2000, p.221), the criteria to be considered a system must meet at least two of the following conditions: the components each need to be able to affect the whole; interdependency of components; and any sub group of a component impacts the whole and is also interdependent (Laszlo & Krippner, 1998).

The variables of safety climate, leadership, and PE can be combined toward a systems model. Generally thought of in terms of ‘hard’ systems which may be related to mathematical equations, applications of systems theory can be made to the human, or ‘soft’, dynamics of the workplace on a variety of relational levels to include interpersonal

and intergroup (Connors & Caple, 2005; Laszlo & Krippner, 1998). An example of this application took place in a study in a manufacturing environment where various antecedents and consequences to the factor of employee empowerment showed a framework of a system can be made from the 'soft' factors such as employee motivation and management implications (McEwan, 1999).

Systems are subject to their boundaries with respect to membership and factors allowed to influence the system (Connors & Caple, 2005; Bailey, 2005). In the organizational sense, the membership can change through turnover of employees and with leaders who affect the application of consequences of safety protocols (safety climate) as designed by upper management. As with any other system, a form of feedback is evident which can be positive or negative (Laszlo & Krippner, 1998). Considering system boundaries as somewhat flexible and permeable, feedback is given through the leadership style, safety climate, and employee exercising of PE and will determine the robust nature of the system's interconnectedness as measured through safety outcomes (Laszlo & Krippner, 1998).

The human psychological adaptation of systems theory relates to the individual's critical analysis of the methods and processes of the system as a whole. As such, the employee perceives a sense of PE, analyzes the leader's style, and interprets the safety climate in order to make choices about action to take. Employee viewpoint on the safety climate provides a level of social awareness that guides them on how to act. Finally, the conception that they are emancipated in determining their actions, self-determinism

(Spreitzer, 1995a; 1995b) under PE, leads to proper safety behavior which can lead to a higher quality of work life (Laszlo & Krippner, 1998).

Measuring safety climate at the organizational level provides insights as to how employees perceive the company's emphasis, or value, on safety based on their approach in determining and administering safety policies, procedures, and practices (Leitáo & Greiner, 2016). The humanistic application of systems theory relies on the notion that humans guide themselves through perception of their surroundings and the development of a cognitive map to make sense of what is taking place (Laszlo & Krippner, 1988). The boundaries of the system are set by the manner in which the policies, procedures, and processes are administered thereby promoting the ability to interpret the implications for not behaving safely (Ulrich & Reynolds, 2010). People can learn vicariously through one another (Bandura, 1982); therefore, the determination that employees are psychology empowered can transfer to others and thus lead to actions leading to safety outcomes (Laszlo & Krippner,1988). Thus, employees will observe actions leaders take, how leaders apply the factors leading to a safety climate, and they will rely on their level of PE to choose their actions.

Summary and Conclusions

Organizations have a vested interest in understanding the factors that lead to organizational outcomes. Safety outcomes, in particular, are important as they can have a large monetary cost to the organization as well as an impact on other outcomes such as turnover, job satisfaction, and productivity. From a moral standpoint, having poor safety

outcomes can impact an employee and their family from a monetary and quality of life stand point.

This literature review covered the factors of leadership, safety climate, and PE and applied them to serving as a system in driving safety outcomes. Each of these factors has benefit in driving various outcomes in the work environment. However, to date there is no research that combines all three of these factors to investigate their united power in driving safety outcomes. A goal of this study is to further unlock the understanding of drivers of safety behaviors so that human resources and safety professionals, policy makers, and organizational leaders can develop programs and policies from administrative and people development perspectives to improve the rate at which industrial injury occurs. Progress in this area can lead to positive social change at the individual, family, community, and organization levels.

Chapter 3 covers the research design and methods used to explore the variables of interest. The discussion covers the population and sampling methods as well as the survey instruments that were used. An evaluation of validity threats and ethical implications complete the chapter.

Chapter 4 displays and discusses the findings of the survey output and provides a summary of the research data. Chapter 5 culminates the work with a brief review of the totality of the research followed by the interpretation of the discoveries. Study limitations, recommendations, future research opportunities, and commentary on the implications to social change conclude the chapter.

Chapter 3: Research Method

Introduction

The purpose of this study was to assess the relationships between leadership style, safety climate, and PE with respect to safety outcomes of front line food manufacturing employees. In this chapter, I describe the research design and corresponding rationale, provide an overview of the population and convenience sample, summarize the measures used, and outline the data collection procedures. I also offer explanations of identified threats to validity and address the ethical considerations involved in this study.

Research Design and Rationale

I used a quantitative, correlational, cross-sectional survey research design to assess the relationship between the independent variables of leadership and safety climate and potential mediating effect of PE on the dependent variable of safety outcomes (work related injury incurred in previous 12 months) of front-line food manufacturing employees. The main value in using a cross-sectional design, as opposed to a longitudinal design, primarily rests on its ability to quickly, conveniently, and economically attain a measure of attitudes in a single time period from a sample drawn from the population of interest (Kirk, 2013; Levin, 2006). Ancillary benefits to using the cross-sectional design include its ability to help identify prevalence of attitudes that may be generalized across the population while negating the possibility of attrition of participants (Levin, 2006; Kirk, 2013). This design was appropriate for this study given the multiple variables associated with employee attitudes. My intent was to identify the relationship between the independent variables, a mediator, and the dependent variable of safety outcomes.

Although causation was not readily determinable, the findings may provide insights for future researchers using variable manipulation in the quest to determine causation of safety incidents (Frankfort-Nachmias & Nachmias, 2014; Levin, 2006).

Methodology

Population

The target population was United States food manufacturers' hourly-paid production employees who had been employed for at least 6 months. I used a convenience sample of organizations with professional acquaintances. Per the Bureau of Labor Statistics, the total population of food production workers has steadily increased to approximately 1,533,000 million employees (Bureau of Labor Statistics, 2016a) working in approximately 30,000 facilities across the United States (United States Department of Agriculture, 2016). I deemed the issue of job tenure as important, as 6 months provides time for employees to develop their cognitive attitudes toward the job, the organization, and to understand the leadership style of their supervisors. Considering the Bureau of Labor Statistics (2015) data that showed the majority of injuries took place after 3 months, I used the 6-month tenure period to prevent skewness of results.

Sampling

I used a non-probability convenience sample of food manufacturing organizations whose leaders expressed interest in this research. Targeted organizations were located in the Midwest and Southwest regions of the United States and sourced via professional relationships I held in the industry.

The targeted sample size was calculated using the G*Power version 3.1.9.2 statistical test of linear multiple regression (fixed model, R^2 deviation from zero; see Faul, Erdfelder, Lang, & Buchner, 2007). Using three predictors, an effect size of .15, α =.05, and a statistical power of .80, the calculated sample size was 77 participants. Convention holds significance of .05 and power of .80 is generally acceptable in research studies (Field, 2013; Rudestam & Newton, 2015). The effect size was based on the results of previous relevant studies using PE as a mediating variable. Spreitzer (1995a) and Bonias et al. (2010) experienced a medium effect size in their studies using PE as a mediator between structural characteristics and individual outcomes, and between high performance work systems and perception of quality care, respectively. Using Cohen's model (1992), the recommended sample sizes that correlate to a medium effect reveal a sample size of 76 which is very close to the G*Power calculation. Documentation of studies using mediation in research showed 34.39% of studies were comprised of 51-150 participants, thereby placing this calculation within the largest percentage of sample sizes for this type of study (Fritz & MacKinnon, 2010). The required sample number for this study was targeted to be 77 or more. To account for this amount, I targeted 140 hourly employee participants to complete the survey.

Instruments

Collection of data was done using the Organizational-Level Safety Climate Survey developed by Zohar and Luria (2005), the Psychological Empowerment Instrument by Spreitzer (1995b); and the Leader Behavior Scale (Podsakoff et al., 1990). Additionally, I administered a set of demographic questions to collect participant gender,

age, company tenure, current department tenure, and self-reported number of injuries—OSHA reportable or not—incurred within the last year (see Appendix D).

Organization-Level Safety Climate Measure

The instrument of choice to measure employee perceptions of safety climate was the Organizational-Level Safety Climate Measure (OLSC; Zohar & Luria, 2005). I secured permission to use the measure from the American Psychological Association (see Appendix A).

The OLSC is composed of 16 items that cover three content themes, and that culminate in a global measure of managerial commitment to safety referred to as *climate*. The first theme of *active practices* includes items measuring the factor of monitoring and enforcing of safety considerations. The second theme of *proactive practices* is centered on measuring perceptions of promotion of learning and development of employees. Finally, the theme of *declarative practices* relates to perceptions of declaring and informing on safety issues. The 16-items of the OLSC are measured using a 5-point Likert scale ranging from 1 (*completely disagree*) to 5 (*completely agree*). The overall measure of climate is determined by averaging the response score of each of the 16 items. The reliability of the instrument is strong, with a Cronbach's alpha of $\alpha = .92$ and significant validity (r .94, $p < .001$). Each of the items is introduced by the statement, "top management in this plant-company" to bring focus to the actions of the top level of the organization regarding safety (Zohar & Luria, 2005). The importance of this statement is that it focuses employees on the distinction between the organization's role

in setting a safety climate and the role of the supervisor based on supervisory actions and attitudes (Zohar & Luria, 2005).

The value in using this scale lies in its predictive validity. It was tested against observable safety outcome criteria among 3,952 production employees from 36 manufacturing plants specializing in metal, plastics, chemicals, and food manufacturing (Zohar & Luria, 2005).

Psychological Empowerment Measure

Spreitzer's PE measure is composed of four dimensions: meaning, competence, self-determination, and impact (Spreitzer, 1995b). Central to the definition of PE is the point that it is not generalizable across all aspects of one's life; rather, it explicitly pertains to the work environment which molds and shapes an individual's cognitions of personal PE and the degree thereof (Spreitzer, 1995b). Because PE is influenced by the work environment but determined by the individual, I used it as the individual component in the systems theory model. I was given permission to use the measure by Spreitzer and the Academy of Management (see Appendix B).

The PE Instrument is composed of four sub-dimensions: *meaning*, *competence*, *impact*, and *self-determinatio*n measured using three items from each of the four sub-dimensions for a total of 12 items extracted from and adapted from the works of other researchers (Spreitzer, 1995b). Each sub-dimension is measured on a 7-point Likert scale ranging from 1 (*very strongly disagree*) to 7 (*very strongly agree)* and scored through taking the mean of the subdimension means. Higher scores indicate more perceived PE.

This measure includes items such as, “I am confident about my ability to do my job” and “The work I do is meaningful to me” (Spreitzer, 1995b).

Tested across two sample populations, Spreitzer (1995b) demonstrated solid reliability for the overall 12-item measure with a sample from the industrial arena providing a Cronbach’s alpha of .72 and the second sample from the insurance industry showing a Cronbach’s alpha of .62 when the sub-dimensions were factored in aggregate. Results of the insurance industry sample revealed strong test-retest reliability of each of the subdimensions as two administrations of the instrument were given the same population 5 months apart with little mortality impact (Creswell, 2013). Although each of the sub-dimensions can be a construct independently, it is through the additive nature of the four subdimensions that the overall construct of PE is formed (Spreitzer, 1995b), therefore, I used a mean of all 12 items in the measure to use one aggregate score as a measure of PE.

The measure of PE has been shown to be reliable and significant in tests of mediation between leadership and other outcome variables such as work engagement ($\rho <$ .001, de Klerk & Stander, 2014). Extending this to the realm of safety, Tong et al. (2015) found PE to be a significant and reliable mediator in the relationship between leadership effectiveness behavior and safety commitment among Occupational Health and Safety Officers. Construct validity for the PE mediator variable, as measured by Spreitzer’s PE Measure, was shown to be $\alpha = .77$ and the correlation between and leadership effectiveness behavior had a value of .49 and was significant ($p < .01$, Tong et al., 2015).

Leader Behavior Scale

The Leader Behavior Scale assesses leadership behaviors across six dimensions: identifying and articulating a vision, serving as a model, fostering acceptance of group goals, holding high performance expectations, providing individualized support, and intellectual stimulation (Podsakoff et al., 1990, p. 112). Because this inventory revealed a mediation effect between leadership style and the organizational outcome of organizational citizenship behaviors rather than showing a direct relationship between leadership style and an organizational outcome, it is suited to explore the hypothesis that PE will mediate between leadership and safety climate on safety outcomes. I was granted permission by Elsevier to use the instrument (see Appendix C). I used it as the supervisor component in the systems theory model.

The Leader Behavior scale was developed using an inventory of approximately 100 items aligned with research on transformational leadership done by various researchers. The items were subjected to a Q-sort across 12 content experts and then transformed into a questionnaire subjected to confirmatory factor analysis (Podsakoff et al, 1990). The determined set of items for the construct of transformational leadership was tested on a group of employees from a U.S. based petrochemical company with an 80% response rates (Podsakoff et al, 1990). Reliabilities across the six dimensions in aggregate ranged from $\alpha = .80$ to $\alpha = .90$ and showed as significant ($\rho < .01$) and were retested in a later study of 1,539 employees and 1,200 managers of large companies covering a variety of industries with similar reliability measures (Podsakoff et al., 1996). Although Podsakoff's study also included a factor analysis and the development of short

scale of transactional leadership (Podsakoff et al, 1990), the purpose of my study was to explore employee perception of transformational leadership as it relates to safety outcomes. Therefore, only the 23 items included on the transformational leadership scale were used. Each item was measured on a 7-point Likert scale ranging from 1 (s*trongly disagree*) to 7 (s*trongly agree)*. Scoring of participant results was calculated using the mean of each participant's responses.

Data Collection

Interested organizations granted me access to their facilities to personally administer the surveys to their employees. This process entailed distribution of paper-and-pencil surveys to employees along with informed consent letters. The employees completed and returned their survey directly to me to seal in an envelope prior to my departure from the facility. Participants were offered a monetary inducement of $5.00 for completion of a survey.

The study complied with the American Psychological Association's and Walden University Institutional Review Board's (IRB) requirement to provide informed consent (IRB approval #05-03-17-0330166). Each participant received a consent form notifying them of the confidentiality of their participation and responses along with instructions on how to withdraw from the study at any time by submitting a blank survey form or opting to leave the room. The letter stated assurance of the voluntary nature of their participation and the process of keeping the data secure as well as any risks and benefits that may be associated with their participation (Fisher, 2013).

Data Analysis Plan

To assess the data collected for this non-experimental design, analysis was conducted using SPSS version 23 software. I used multiple regression to assess the relationships between the predictor variables of leadership and safety climate on the criterion variable of safety outcomes. PE served as a mediating variable on both the variables of leadership and safety outcomes on the criterion variable of safety outcomes. Although demographic factors were collected, they served merely as control variables.

Use of regression analysis required attention to the statistical assumptions particular to the method. The first assumption is that of linearity where the criterion variable of safety outcomes will be linearly related to the predictor criteria of leadership, safety climate, and PE (Field, 2013; Swanson & Holton, 2005). Secondly, is the assumption of independence in errors meaning there would be no correlation between the errors that may have resulted in observations. Violation of this assumption could alter the confidence intervals and tests of significance rendering them invalid (Field, 2013; Swanson & Holton, 2005). Third, the predictor, or independent, variables should be free of multicollinearity. Moderate to highly correlated predictor variables could lessen the ability to assess the implications of relationship to the criterion variable (Field, 2013; Swanson & Holton, 2005). The final assumption is the variance of error across the predictor variables would result in homoscedasticity. Failure of this taking place could lead to a skew in the calculation of the outcome depending on the degree of heteroscedasticity that was evident (Field, 2013; Swanson & Holton, 2005).

Although a basic premise of mediation is that the relationship between the predictor variable and the outcome variable will be reduced to zero, in reality there is often simply a degree of reduction in the relationship that does not equal zero (Field, 2013). To assess the implications of the relationship of the variables in terms of direct and indirect effects, the degree of significance was reviewed (Field, 2013). To test the significance of the indirect effect of the mediation effect of PE on leadership on safety outcomes regression, the Sobel test was utilized (Barron & Kinney, 1986). This method has some dispute to its viability due to the issue of mediation research finding 'full', 'partial', or 'none' regarding effect (Zhao, Lynch Jr., & Chen, 2010) and it has been argued that the conservative nature of the test can result in Type II error (Preacher & Hayes, 2004). An alternative test of bootstrapping has been recommended; however, research has shown that bootstrapping can lead to both Type I and Type II errors, especially in studies with small sample sizes of 20 – 80 participants (Koopman, Howe, Hollenbeck, & Sin, 2015). Regardless of this dispute, the Sobel test is a popular method for testing the significance of the direct and indirect measures of the independent and mediating variables on the dependent variable (Field, 2013). Care was taken to objectively review the statistical outcomes of the calculations to ensure the proper interpretation of the data was made.

Following is the plan used to test each of the hypotheses:

To test the first research question of whether leadership style has a direct effect on workplace injuries (safety outcomes), the data from the Leader Behavior Scale measuring

the predictor variable of leadership was regressed on the self-report data of safety outcomes which serves as the criterion variable.

To test the second research question of whether safety climate has a direct effect on workplace injuries (safety outcomes), the data from the Organizational – Level Safety Climate Measure of the predictor variable of safety climate was regressed on the self-report data of safety outcomes which serves as the criterion variable.

To test the third research question of whether employee PE has a direct effect on workplace injuries (safety outcomes), the data from the Psychological Empowerment Instrument of the predictor variable of PE was regressed on the self-report data of safety outcomes which serves as the criterion variable.

To test the fourth research question of whether employee PE mediates the relationship between leadership style and safety climate on workplace injuries (safety outcomes), Baron and Kinney's (1986) steps for mediation were used to regress the mediator (PE) on the predictor variable of leadership and then to regress the mediator (PE) on the predictor variable of safety climate. The criterion variable, safety outcomes, was then regressed on both predictor variables, leadership and safety outcomes. Finally, the criterion variable of safety outcomes was regressed on both predictor variables, leadership and safety climate, along with the mediator of PE. The Sobel test was conducted to assess the significance of the indirect effect of the mediator on the predictor variables. Descriptive statistics were produced on all variables and scatter plots are provided to illustrate relationships of the variables

Threats to Validity

Three main concerns with validity resided in the areas of internal, external, and statistical conclusion validity. Internal validity is generally related to experimental designs due to the ability to more readily assess a cause-and-effect relationship (Slack & Draugalis, 2001; Onwuegbuzie, 2000) and thus was expected to be low considering the non-experimental design of this study. Such factors as history, maturation, testing, regression, selection, and mortality were not issues of internal validity in this design. The issue of concern was that of a causal force other than that expected from the independent variable (Brewer, 2000). Because the study is based on a factor of mediation, it was important to frame the results in terms of correlation rather than causation to avoid confusion regarding the issue of internal validity (Stone-Romero & Rosopa, 2008).

Threats to external validity are mainly related to generalizing the outcomes to industry sectors beyond food manufacturing. Although the main threats are the generalizability beyond the food manufacturing sector, there could be some threat based on ecological factors within other food manufacturers depending on such factors such as cultural beliefs, personal work values, and paradigms toward management and leadership actions (Drost, 2011; Onwuegbuzie, 2000). Having the sample population well-defined will help limit the negative impact if replicating the study across other populations (Slack & Draugalis, 2001).

Statistical validity can be jeopardized though having an improper significance level and improper confidence levels that can lead to Type I and Type II errors (Drost, 2011; Onwuegbuzie, 2000). Additionally, multicollinearity among variables or a

violation of assumptions can diminish statistical validity (Drost, 2011). To help control for this, the significance level was set at the common measures of $\alpha = .05$ with a confidence level of .80 CI. Further, the sample size was factored to ensure there were enough participants to protect the viability of the study (Onwuegbuzie, 2000).

Ethical Procedures

Paramount to embarking on a research study is adherence to the ethical principles and standards. Application to the Institutional Review Board (IRB) was made outlining the parameters for the protection of the participants and the information they were to provide. Permission was granted with approval number 05-03-17-0330166. Pending approval of this request, initial targeted organizations were sent a Letter of Cooperation to request their participation in the study. The letter was accompanied by a brief research proposal and details on the target participants, explanation that data collection would be via surveys, the estimated time required of their employees, a request to use their breakroom to conduct the survey, and emphasis on the voluntary nature of employee participation. Privacy for the company is maintained by avoiding use of their company name in the dissertation. Privacy for employees is maintained by coding each survey with a survey number rather than a participant name. Additionally, results are based on aggregate responses rather than individual responses. The surveys and other research data will be kept in a dedicated, locked fire-proof box where only I have access for a period of five years.

Summary

The purpose of this study was to determine the mediation effect of PE on the relationship between leadership style and safety climate of employee safety outcomes. The research design was a correlational, cross-section type using a convenience sample of food manufacturing organizations willing to participate. Data was obtained from front-line manufacturing employees in participating organizations using data from the Organization-Level Safety Climate Questionnaire (Zohar & Luria, 2005), the Psychological Empowerment Instrument (Spreitzer, 1995b), and the Leader Behavior Scale (Podsakoff et al., 1990). Responses were tested using multiple regression following Barron and Kenny's (1986) methodology followed by Sobel testing. Care was taken to eliminate or reduce threats to validity as well as to protect the confidentiality of the participating organizations and their contributing employees. Chapter 4 displays the statistical results of the study. Chapter five discusses the interpretation of the results, provides conclusions, addresses any limitations, and offers recommendations for future research.

Chapter 4: Results

Introduction

In this study I explored the relationship between safety outcomes (work-related injuries) and the factors of leadership behavior and organizational-level safety climate as mediated by PE. I conducted mediation analysis of data from a sample of front-line food production employees with a minimum of 6 months on the job to contribute to the body of studies linking leadership to safety outcomes and behaviors (Barling et al, 2002; Clarke, 2013; Luria & Morag, 2012; Nielsen et al., 2016) via employee perceived PE. Additionally, I explored PE as a mediator to build upon research showing a relationship between safety climate and safety outcomes (Clarke, 2006; Johnson, 2007; Leitáo & Greiner, 2016). The purpose of the study was to test the role of employee cognitions, specifically PE, as they related to leadership and safety climate in the result of safety outcomes. To these ends, I tested the following research questions and hypotheses:

Research Question 1: Does leadership style significantly predict whether an employee will incur any workplace injuries?

$H_0$1: Leadership style does not significantly predict workplace injuries.

H_a1: Leadership style significantly predicts workplace injuries.

Research Question 2: Does safety climate significantly predict whether an employee will incur any workplace injuries?

$H_0$2: Safety climate does not significantly predict workplace injuries.

H_a2: Safety climate significantly predicts workplace injuries.

Research Question 3: Does employee PE significantly predict whether an employee will incur any workplace injuries?

$H_0$3: Employee PE does not significantly predict workplace injuries.

H_a3: Employee PE significantly predicts workplace injuries.

Research Question 4: Does employee PE mediate the relationship between the leadership style and safety climate in predicting whether an employee will incur any workplace injuries?

$H_0$4: Employee PE does not mediate the relationship between leadership style and safety climate in predicting workplace injuries.

H_a4: Employee PE mediates the relationship between leadership style and safety climate in predicting workplace injuries.

In Chapter 4, I review data collection information including time frame, response rates, baseline descriptions of the sample, and the degree to which the sample represents the population. I then present statistical results including the descriptive data of the sample, a review of statistical assumptions, statistical findings related to the hypotheses, additional tests that I used to explore the data, and pertinent tables and figures. The chapter culminates with a summary of answers to the research questions and a transition to Chapter 5.

Data Collection

Data were collected over a 4-week period from a convenience sample consisting of three food manufacturing organizations located in Utah, Iowa, and Texas. Participants were hourly-paid, front-line food manufacturing employees who worked in production

roles. Data were collected from the participants via paper-and-pencil survey, and each participant was given $5.00 for their participation. I collected data onsite while participants were on break in the facility break room. Two of the participating companies employed fewer than 50 employees across functions; the third company employed more than 2,000 employees. As a result, 83% of the survey data was collected from the third company. Additionally, the two smaller companies were not unionized, whereas the third company was unionized. A total of 140 surveys were completed, but I discarded 13 of these because the respondents did not fit the criteria of working in production (i.e. sanitation, lab, supervision) or having the necessary 6 months of tenure. Of the remaining completed surveys, three different sets of participant responses each had an omitted response of one questionnaire item. To correct for this, I used the imputed mean of that item and inserted it to make the data set whole (Horton & Kleinman, 2007). In reviewing the data for outliers, I reviewed residuals and removed those above 3.29, resulting in the elimination of a total of cases affecting two participant's data set. Review of the centered leverage values showed one case with a value of over .02 with a score of .029. However, I determined that it contributed little risk to the analysis and kept in the data set. After the data screening and evaluation, a total of 125 cases remained and were used in the analysis.

The final sample examined in this study consisted of 65 males and 60 females. Job tenure was segmented in accordance with the Bureau of Labor Statistics (2015) categories (see Table 1), and age group data (see Table 2) were collected showing categorical approximation with age distributions across the food manufacturing industry

(Bureau of Labor Statistics, 2016b). Although the G*Power statistic showed a needed sample size of 76 and I used a sample of 125, this number provided a very small proportion of the total food manufacturing population of approximately 1.5 million employees (Bureau of Labor Statistics, 2016a).

Table 1

Summary of Job Tenure Categories

Tenure	Number of Participants	Percent of Participants
7-12 Months	17	13.6
13-23 Months	19	15.2
2-4 Years	17	13.6
5-9 Years	10	8.0
10-14 Years	19	15.2
15-19 Years	17	13.6
Over 20 Years	26	20.8
Total	125	100.0

Table 2

Summary of Participant Age Ranges and Responses 7

Age Range	Number	Percent
18-24	12	9.6
25-34	28	22.4
35-44	31	24.8
45-54	33	26.4
55-64	21	16.8
Total	125	100.0

Results

Using SPSS version 23, I completed reliability testing, which revealed strong alphas for each instrument (see Table 3). Generally accepted ranges for alphas is between 0.70 and 0.95; however, alphas above 0.90 may be indicators of redundancy in the items of an instrument (Tavokal & Dennick, 2011). The aggregate means and standard deviations for each instrument and the outcome variable were also calculated (see Table 4). I performed multiple regression to assess the effect leadership behavior and safety climate had on safety outcomes and to assess the extent to which PE may act as a mediator of safety outcomes. Mediation analysis following Barron and Kenny's (1986) steps for mediation was used to test the hypotheses. In Step 1 of the analysis I regressed the predictor variables of leadership and safety climate on the criterion variable of safety climate. In Step 2 of the analysis I regressed the predictor variables on the mediator

variable of PE to assess whether there is a relationship. In Step 3 of the analysis I regressed the mediator variable of PE on the criterion variable of safety outcomes to test for effect. Finally, in Step 4 I performed multiple regression to assess the indirect effect of leadership and PE on the criterion of safety outcomes. I then conducted a second multiple regression to assess the indirect effect of safety climate and PE on the criterion of safety outcomes.

Table 3

Cronbach's Alpha for Variables

Variable	Cronbach's Alpha	*N* of Items
PE	.89	125
Safety climate	.93	125
Leadership	.96	125

Table 4

Descriptive Statistics of Predictor and Outcome Variables

Variable	*N*	*Min*	*Max*	*M*	*SD*
PE	125	3.42	7.00	5.55	.81
Safety climate	125	2.06	5.00	3.96	.68
Leadership	125	1.17	7.00	5.01	1.10
Safety outcomes	125	0.00	2.00	.23	.53

Note. Safety outcomes equals the number of injuries reported.

Prior to testing the hypotheses, statistical assumptions regarding multicollinearity, independence of errors, homoscedasticity, and of a linear relationship between the independent variables and the dependent variables must be met. The tolerance and VIF scores for leadership behavior (.591; 1.69), for safety climate (.625; 1.60), and for PE (.789, 1.27) were above .1 for tolerance and below 2.0 for VIF, indicating there is no collinearity between the variables and each of these variables are valid as predictors of safety outcomes. The Durbin-Watson measured at 2.17 indicated an independence of errors. However, the assumption of homoscedasticity was shown to be violated as revealed through a plot of the residuals (see Figure 1). Additionally, the assumption of normality was also violated as shown in the histogram (Figure 2) and verified by a P-P plot (Figure 3). I made an effort to transform the dependent variable using the Log transformation with the constant of 1 added (Field, 2013). Skewness (1.86) and kurtosis (1.97) measures reflected that the variable remained in a non-normal state (*SD* = .14). Non-normality has been shown to have a high prevalence in research studies (Cain, Zhang, & Yuan, 2016) and support has been given to disregard cases of non-normality in regression studies (Li, Wong, Lamoureaux, & Wong, 2012). Therefore, I performed the analysis despite the assumptions being violated.

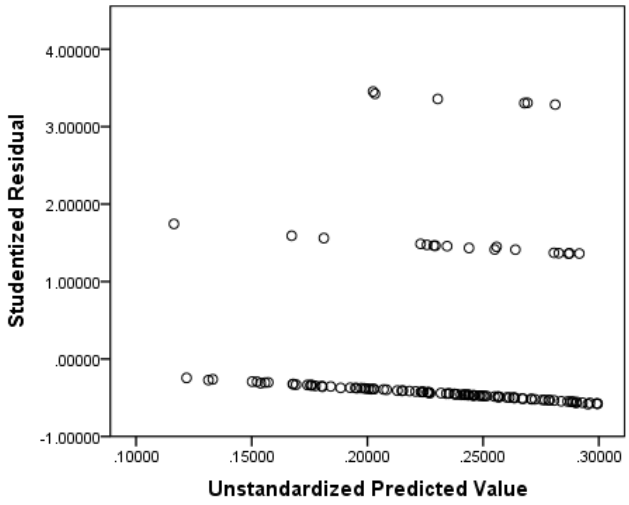

Figure 1. Scatterplot of the regression standardized residual.

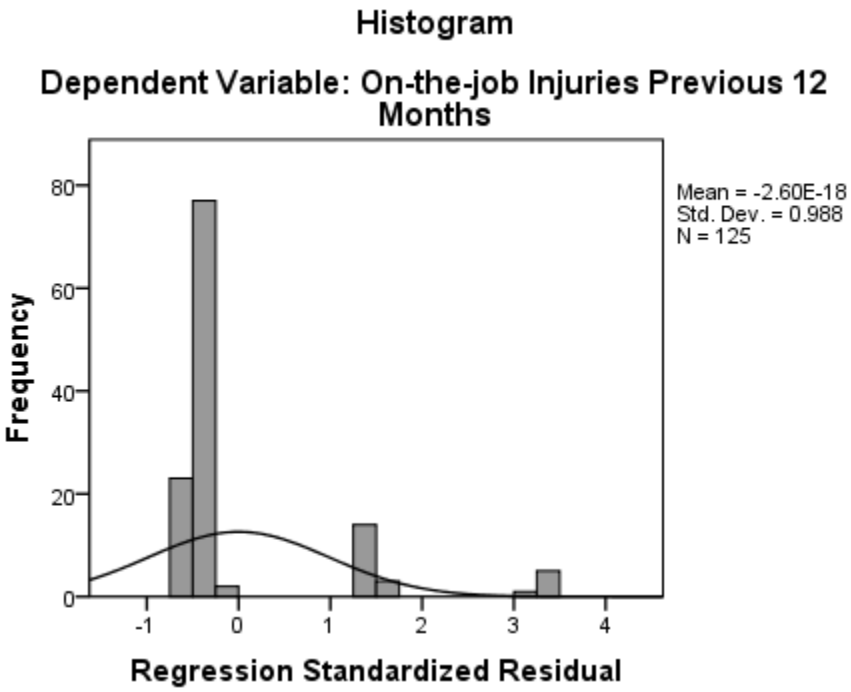

Figure 2. Histogram of the regression standardized residual.

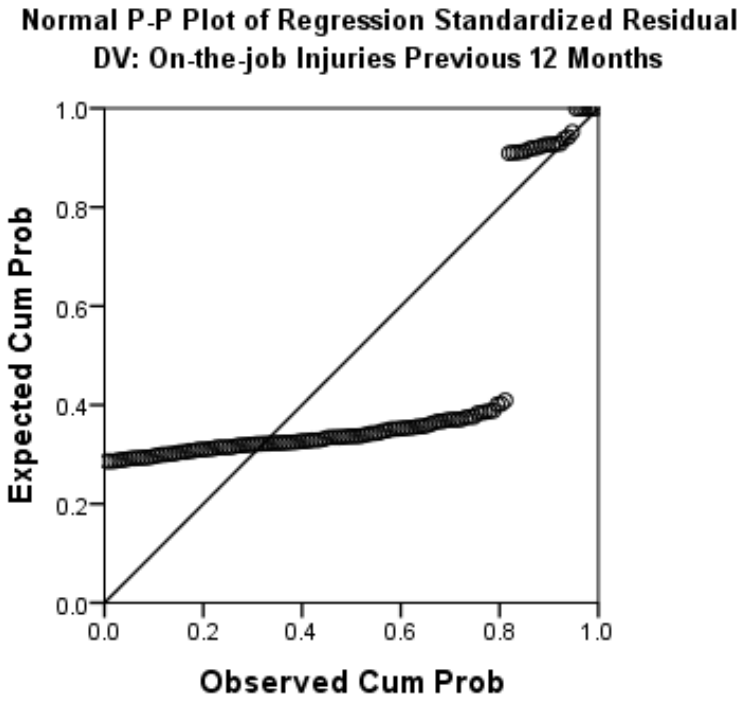

Figure 3. P-P plot of the regression standardized residual.

The overarching research question for the study was Research Question 4: Does employee PE mediate the relationship between the leadership style and safety climate in predicting whether an employee will incur any workplace injuries? The first three study hypotheses stated that leadership style, safety climate, and PE would not relate to safety outcomes. I conducted multiple regression analysis to test each of these hypotheses using the Baron and Kenny method with the following findings:

Research Question 1: Does leadership style significantly predict whether an employee will incur any workplace injuries?

$H_0$1: Leadership style does not significantly predict workplace injuries.

H_a1: Leadership style significantly predicts workplace injuries.

Standard mediation analysis was conducted to evaluate the relationship between the IV of leadership and the DV of safety outcomes. The findings showed a statistically non-significant correlation between them R^2 = .002, $F(1, 123) = 0.26$, p = .614; adjusted R^2 = -.006, resulting in failure to reject the null hypothesis.

Research Question 2: Does safety climate significantly predict whether an employee will incur any workplace injuries?

$H_0$2: Safety climate does not significantly predict workplace injuries.

H_a2: Safety climate significantly predicts workplace injuries.

I conducted standard mediation analysis to evaluate the relationship between the IV of safety climate and the DV of safety outcomes. The findings showed a statistically non-significant correlation between them R^2 = .007, $F(1, 123) = 0.842$. p = .361; adjusted R^2 = -.001 resulting in failure to reject the null hypothesis.

Research Question 3: Does employee PE significantly predict whether an employee will incur any workplace injuries?

$H_0$3: Employee PE does not significantly predict workplace injuries.

H_a3: Employee PE significantly predicts workplace injuries.

Standard mediation analysis was conducted to evaluate the relationship between the mediator variable of PE in the capacity of an IV and the DV of safety outcomes. The findings showed a statistically non-significant correlation between them, R^2 = .001, $F(1, 123) = 0.14$, p = .710; adjusted R^2 = -.007 resulting in failure to reject the null hypothesis.

To satisfy the requirements of the Barron and Kenny method (1986), I tested the mediator of PE with the IV of leadership, finding a statistically significant relationship

between them: R^2 = .189, F(1, 123) = 28.68. p < .001; adjusted R^2 = .182. The mediator of PE was also tested with the IV of safety climate finding a statistically significant relationship between them, R^2 = .143, F(1, 123) = 20.54, p < .001; adjusted R^2 = .136.

Research Question 4: Does employee PE mediate the relationship between the leadership style and safety climate in predicting whether an employee will incur any workplace injuries?

$H_0$4: Employee PE does not mediate the relationship between leadership style and safety climate in predicting workplace injuries.

H_a4: Employee PE mediates the relationship between leadership style and safety climate in predicting workplace injuries.

Barron and Kenny's model holds that if there is a statistically non-significant relationship between the independent variable and the dependent variable, there is not a relationship to mediate. Controlling for the IV of leadership behavior, I found a statistically non-significant relationship between the mediator of PE and the DV of safety outcomes, R^2= .002, F(2, 123) = 0.14, p = .87; adjusted R^2= -.014. Controlling for the IV of safety climate, I found a statistically non-significant relationship between the mediator of PE and the DV of safety outcomes, R^2 = .007, F(2, 123) = 0.42, p = .66.

I performed post-hoc analysis to identify whether there was an indirect effect of mediation present. Figure 4 and Figure 5 display the mediation model with coefficients from the preceding analyses needed to test the statistical significance of the indirect effect. Sobel testing Showed statistically non-significant results in examining the direct and indirect effects considering the path of leadership on safety outcomes versus a path

that included the mediator of PE (z = .17, p = .87). Additionally, Sobel testing showed statistically non-significant results in examining the direct and indirect effects considering the path of safety climate on safety outcomes versus a path that included the mediator of PE (z = .03, p = .97).

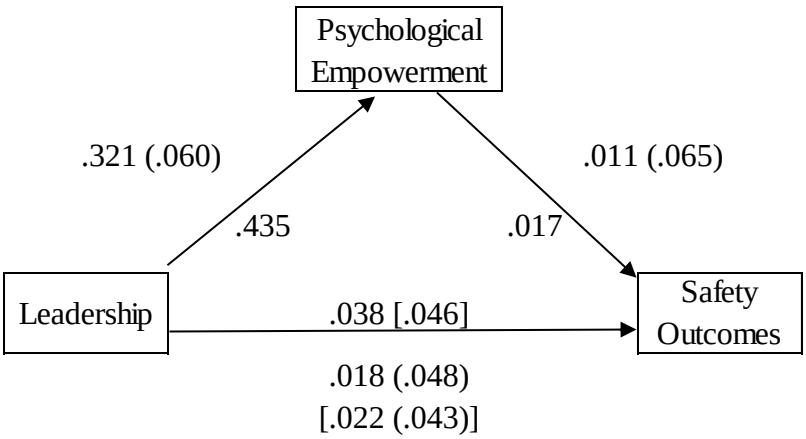

Figure 4. Mediation model path diagram with obtained coefficients.

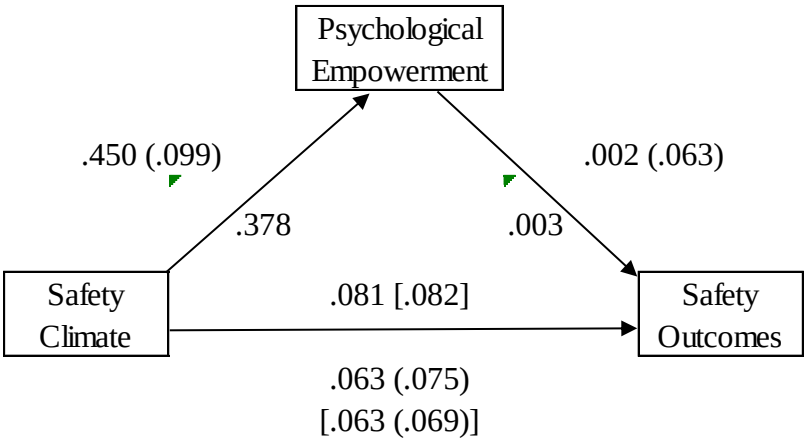

Figure 5. Mediation model path diagram with obtained coefficients.

Summary

For this study, I used multiple regression to determine whether there was a mediating relationship of PE on the independent variables of leadership and safety climate on the criterion variable of safety outcomes. I used Barron and Kenny's method of mediation and the data revealed the relationships between leadership and safety outcomes; safety climate and safety outcomes; and PE and safety outcomes were statistically non-significant leading to the acceptance of each of the null hypotheses. I used further analysis of Sobel testing which showed statistically non-significance in the mediating ability of PE on leadership and safety outcomes and on the mediating ability of PE on safety climate and safety outcomes. In Chapter 5 I will cover the interpretation of these findings, limitations to the study, recommendations for further research, and implications to positive social change.

Chapter 5: Discussion

Introduction

The incidence of workplace injuries continues to remain at nearly 3 million annually despite the oversite of OSHA and the interventions put in place by organizations (Bureau of Labor Statistics, 2016a). The purpose of this study was to explore the mediating effects of employee PE on the role of leadership and safety climate in predicting the likelihood of an employee incurring an injury. Specifically, I defined safety outcomes as work-related injuries the employee had incurred within the previous 12 months of taking the survey. The population was front-line food manufacturing employees with at least 6 months of time on the job working in the job function of production. By understanding the implications of the cognitive processes of employees through PE, organizational leaders, human resources professionals, and safety professionals may better design programs and interventions to reduce the chance of work-related injury.

In this quantitative study, I used mediation analysis based on Barron and Kenny's (1986) method on data collected from 125 participants. To collect the data, I used the Psychological Empowerment Instrument (Spreitzer, 1995b), the Organizational-Level Safety Climate Survey (Zohar & Luria, 2005), the Transformational Leadership Inventory (Podsakoff et al., 1990), and a basic demographic survey requesting that participants self-report the number of injuries they had incurred in the previous 12 months. The surveys were numbered and required no personal identifiers such as name, employee number, or social security number, leaving answers totally anonymous.

The findings of each of the research questions showed statistically non-significant results in the relationship between leadership and safety outcomes, safety climate and safety outcomes, and PE and safety outcomes leading to accepting the null hypotheses for each research questions. I developed Research Question 4 to examine whether there was a mediating effect of PE on leadership and safety climate on safety outcomes. In accordance with Barron and Kenny's method (1986), because the findings from the other three research questions showed there was no relationship to mediate, the conclusion was to accept the forth null hypothesis that employee PE does not mediate the relationship between leadership style and safety climate in predicting workplace injuries.

Interpretation of Findings

In this study, I found statistically non-significant relationships between the factors of PE, safety climate, and leadership, and the occurrence of work-related injuries. Review of the data without statistical analysis could lead one to believe there is a relationship between them because the means are fairly high across each predictor variable and very low for the criterion variable of safety outcomes (see Table 4 in Chapter 3). There is an opinion among some researchers that the use of significance testing based on *p* values in null hypothesis testing can be ineffective. And alternate choice of referring to the effect size can be used to provide insights as to the relationship between the variables. In the case of this study, the effect sizes reflected very small effects based on Cohen's guidelines (Field, 2013), thus leading to my conclusion that evidence for the predictive ability of each of these variables for safety outcomes cannot be established.

In studies of the impact of leadership on safety outcomes, several researchers have found significant relationships between the variables (Baxter, 2013; Eid et al., 2012; Griffin & Hu, 2013). For instance, in her meta-analysis Clarke (2013) found that both transactional and transformational leadership can elicit safety participation and compliance, respectively. The difference between these factors and the factor of safety outcomes is that neither compliance nor work behavior equate to the actual incident of incurring a safety-related injury. They are precursors to injury or injury avoidance. However, Zohar (2002) showed that leadership did predict injury rate in a study of 411 metal processing plant employees. Hechanova-Alampay and Beehr's (2001) study of a large chemical company adds ambiguity to understanding the relationship between leadership and safety by showing that leader span of control is a factor that positively correlates to unsafe behaviors and accidents, which is an unknown factor in this or any of the earlier mentioned studies. The results bring little clarification and leave room for exploration of additional variables that may implicate safety outcomes.

The relationship between safety climate and safety outcomes showed a non-significant effect that furthers the ambiguity in this relationship, as noted in previous findings. The essence of safety climate is a personal measure based on a particular point in time (Zohar, 1980) where one's perceptual understanding of the value of safety is defined by how one experiences the application of safety policies, practices, and procedures according to how they are rewarded or punished (Luria & Yagil, 2010; Rogelberg, 2007). Clarke's (2006) meta-analysis of 32 studies initially showed that safety climate was significantly correlated to safety performance and involvement in accidents.

However, further exploration of this analysis showed that the validity was questionable because there was a wide variety of industries included in the study. Smith et al's (2006) research using a variety of industries showed a variety of safety climate scores associated with safety outcomes from surveys covering 33 companies across 12 industries. Interpretation of Smith's study implies that different levels of risks and hazards can bring about a skewed understanding of the relationship of safety climate with safety outcomes. This was further validated by the Norwegian oil and gas industry study of 51,083 employees that had mixed results concerning safety climate and the incidence of major accidents (Kvalheim et al., 2016). Leitáo and Greiner (2016) found a symbiotic relationship between safety climate and injures through analysis of 17 studies. However, despite this relationship, they posited that actual causation of accidents and injuries in relation to safety climate remains ambiguous, necessitating the exploration of other influencing factors in the workplace. The results of my study showed as non-significant between safety climate and safety outcomes. However, the implications of the low number of reported injuries may not be due to safety climate perception. It is possible that recency error was in effect leading to the positive safety climate rating while injuries were reported according to a 12-month look-back period. Thus, the ambiguity remains across studies.

In this study, I found that PE did not have a statistically significant mediating effect on the relationship between leadership, safety climate, and work-related injury. Previous studies of PE have shown it had a relationship on a variety of work-related factors, many of which are more attitude-based such as job satisfaction, organizational

identification, and commitment (Ford & Tetrick, 2011; Seibert et al., 2011; Spreitzer et al., 1997; Zhu et al, 2012). Since many of these factors are attitude-based rather than behavior based, they lead to potential difficulty in comparing these outcomes to those of a study where the outcome is behavior-based such as action leading to injury. There are studies that have shown the mediating ability of PE on behavioral outcomes, including Bonias et al.'s (2010) study of 541 health service organization employees where PE was shown to be a mediator in the outcome of quality of patient care. This dichotomy of types of outcomes was established in a meta-analysis of 142 articles examining the effects of PE on attitudinal and behavioral outcomes (Seibert et al, 2011). PE involves the constructs of meaning, impact, self-determination, and competence, and is not a static state measure; it can adjust cognitively based on how the individual applies any of the four factors toward proactivity (Spreitzer, 1995b). Although the participants in this study reported a relatively high PE score, there is research that shows that intrinsic motivation can partially mediate between PE and performance outcomes (Li et al., 2015). This gives credence to findings of two studies of European train employees and maintenance employees showing that behavioral control leads to safety behaviors (Fugas et al; 2012; Fugas et al., 2013). Thus, a job can have meaning, impact, and the person may be self-determined and competent, yet other factors such as behavioral control may be the conduit for safety outcomes.

Limitations of the Study

As I noted in Chapter 1, there were several limitations to this study including the non-experimental design, the sample used, the potential for alternative predictors, the

time factor of data collection, biased participant data, and the measure of the criterion variable. Regardless of the statistically non-significant findings and the low effect size, this non-experimental design precluded any causal determination. Beyond this, the sample I used well exceeded the projection of G*Power by 40% more participants. However, having an even larger sample size could increase the potential to garner a significant finding.

Although I collected data from employees of three organizations, nearly 80% of the data used came from just one of those organizations. This leaves opportunity for the group norming effect in how supervisor and safety climate perceptions are viewed and measured. Additionally, the number of injuries were mainly reported as "zero," which could be indicative of a strong safety performance in that one organization, thereby leaving little opportunity to build a regression line to test the predictors.

All three predictor variables reported as non-significant in relation to safety outcomes. This is in accordance with many of the prior studies using those variables; however, there is some evidence of their ability to predict safety outcomes. Thus, there may be other variables that I did not consider that impacted the injury rate or the predictor and mediating variable. It is also possible that safety outcomes simply needed to be collected by a different measure (i.e. dichotomously) and statistically analyzed with a different methodology.

The time factor involved in the data collection was limiting, as perceptions of participants across the predictor variables was based on that moment in time when they took the survey. A more longitudinal time frame for collection of attitudes could have

provided more robust and accurate input of attitudes, creating a possibility for confidence in data analysis and making inferences as to the reality of the predictor variable's relationship to safety outcomes.

The time factor of collecting the data and the nature of it being self-reported created limitations based on both recency error and inaccuracy in reporting the number of injuries. Factors such as climate and PE are generally measured based on a static viewpoint of one's attitude toward them. Thus, there is potential that the participants were not considering their responses across several months on the job, but rather within the previous few days. Additionally, some surveys had straight lined responses leaving me to infer that they put no thought into how each factor on the surveys should really be scored. This would skew the overall results. Finally, even though survey responses were anonymous with no personal identifiers, participants were completing it in a company break room. This could have lead them to engage in self-preservation by reporting "zero" injuries to avoid potential negative employment action in the event they were injured previously but did not report it to management. This result could have also been due to recency, in that they may have forgotten about an injury that happened in the past 12 months.

Recommendations

Although the results of this study were non-significant, it does contribute to the body of knowledge of what prompts and employee to incur work-related injury. Much of the research in this area has done little to explore the cognitions and attitudes of employees toward this end (Clarke, 2010; Fugas, et al., 2012; Griffin & Hu, 2013; Probst

& Estrada, 2010; Sunindijo & Zou, 2013). To this point in time, no research has explored the variable of PE on safety outcomes. This study showed non-significance in the relationships between the independent, mediator and criterion variables; however, the raw data showed a positive report of PE and very low injuries. My interpretation at this juncture is there is no statistically significant relationship. Future research could study this variable in terms of a time series using qualitative inquiry to explain the cognitions of the employees in relation to their safety behaviors as a means to clarify PE's role in safety outcomes. Further, other indicators can be explored with respect to what may covary with PE, leadership, or safety climate in leading to the likelihood of incurring a work-related injury.

Another consideration for future research is the overall model used to calculate the results. Many studies are continued without a normal distribution for the dependent variable when the data is collected from a zero-inflated variable (Min & Agresti, 2005). Conducting the study using a different methodology for calculating zero-based data could provide more clarity as to the significance or non-significance of the variables. Further, the study could be altered to test the relationship that safety outcomes have on predicting PE (Barron & Kenny, 1986). Finally, researchers should consider using a larger pool of organizations and participants to avoid any type of group norming effect that may be present in responses.

Implications

Although this study did not establish a mediating effect of PE on leadership and safety climate in relation to safety outcomes, it did get the process started in exploring the

role of cognitions and attitudes of employees in incurring a work-related injury. With the potential of exploring these research questions in a different manner or with additional variables, more clarity can be obtained as to the contributing factors to workplace injury or prevention thereof. The positive social change in this research is the focus on the topic that can lead to better programs and initiatives on the part of organizations to prevent injury. This in turn will lead to better profits for the organization and more well-being for the employees and their family members.

Conclusion

This study is one of the few research studies that considers the cognitive role of the employee toward incurring a work-related injury. Whereas a statistically significant finding across all variables, including the mediation effect of PE, was not found, it is possible there is a relationship that simply needs to be analyzed in a different manner. Previous research has shown a connection between PE and organizational outcomes, including safety commitment (Ford & Tetrick, 2011; Seibert, Wang, & Courtright, 2011; Spreitzer, Kizilos, & Nason, 1997; Tong, Rasiah, Tong, & Lai, 2015; Zhu, Sosik, Riggio, & Yang, 2012). It is possible that other cognitive factors than PE contribute to the incidence of incurring work-related injury. Further, there is the potential that PE does contribute but participants simply did not report all injuries they may have incurred.

With the cost of work-related injury impacting nearly 3 million employees per year (Bureau of Labor Statistics, 2016a) resulting in the need for very expensive tax dollar interventions by OSHA, financial expenditures of corporate monies, and diminished well-being of those who become injured, continued research in this area is

imperative. PE is one of the few cognitive dynamics of the employee-injury relationship that has been studied thus far as a potential contributing factor in incurring or avoiding injury. This research can now be used to build upon what has been learned to further the body of knowledge in this area and consequently lead to higher awareness of the issue in organizations who can then work to develop appropriate human resources interventions to deter injury. Research should involve examination of different cognitive variables as well as use of different methodologies to include observing and interviewing employees. This will result in a positive impact on the employee base and organizations as well-being is preserved, costs of doing business are diminished, and tax payer dollars are conserved. Together, these benefits will have a positive impact on society overall.

References

Ackoff, R. L. (2000). Creating the corporate future. In M. Lucas (Ed.), *Understanding business environments* (pp. 217-227). London, England: Routledge.

Adams, K. M., Hester, P. T., Bradley, J. M., Meyers, T. J., & Keating, C. B. (2014). Systems theory as the foundation for understanding systems. *Systems Engineering*, *17*(1), 112-123. doi:10.1002/sys.21255

Aji, Z. M., Yusof, S. A. M., Osman, W. R. S., & Yusop, N. I. (2010). A conceptual model for psychological empowerment of telecentre users. *Computer and Information Science*, *3*(3), 71. Retrieved from https://www.researchgate.net/profile/Wan_Osman/publication/45363376_A_Conceptual_Model_for_Psychological_Empowerment_of_Telecentre_Users/links/0deec539cf2d40dd0b000000.pdf

Ajzen, I., & Fishbein, M. (1977). Attitude-behavior relations: A theoretical analysis and review of empirical research. *Psychological bulletin*, *84*(5), 888. doi:10.1037/0033-2909.84.5.888

Anderson, N., Ones, D. S., & Sinangil, H. K. (Eds.). (2001). *Handbook of industrial, work and organizational psychology: Vol. 2. Organizational psychology.* London, England: SAGE Publications. Retrieved from http://www.ebrary.com

Antonakis, J., Cianciolo, A.T., & Sternberg, R.J. (2004). *The nature of leadership.* Thousand Oaks, CA: SAGE Publications.

Appelbaum, S. H., Karasek, R., Lapointe, F., & Quelch, K. (2015). Employee empowerment: Factors affecting the consequent success or failure (Part II).

Industrial and Commercial Training, *47*(1), 23-30. doi:10.1108/ICT-05-2013-0034

Aryee, S., Walumbwa, F. O., Seidu, E. Y., & Otaye, L. E. (2012). Impact of high-performance work systems on individual-and branch-level performance: Test of a multilevel model of intermediate linkages. *Journal of Applied Psychology*, *97*(2), 287-300. doi:10.1037/a025739

Avolio, B. J., & Bass, B. M. (1995). Individual consideration viewed at multiple levels of analysis: A multi-level framework for examining the diffusion of transformational leadership. *The Leadership Quarterly*, *6*(2), 199-218. doi:10.1016/1048-9843(95)90035-7

Avolio, B. J., Bass, B. M., & Jung, D. I. (1999). Re-examining the components of transformational and transactional leadership using the Multifactor Leadership. *Journal of Occupational and Organizational Psychology*, *72*(4), 441-462. doi:10.1348/096317999166789

Avolio, B. J., Zhu, W., Koh, W., & Bhatia, P. (2004). Transformational leadership and organizational commitment: Mediating role of psychological empowerment and moderating role of structural distance. *Journal of Organizational Behavior*, *25*(8), 951-968. doi:10.1002/job.283

Bailey, K. D. (2005). General systems theory. In G Ritzer (Ed.), *Encyclopedia of social theory* (pp. 310-315). Thousand Oaks, CA: SAGE Publications. doi:10.4135/9781412952552 .n117

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191-215. doi:10.1016/0146-6402(78)90002-4

Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist, 37*(2), 122-147. doi:10.1037/0003-066X.37.2.122

Barling, J., Loughlin, C., & Kelloway, E. K. (2002). Development and test of a model linking safety-specific transformational leadership and occupational safety. *Journal of Applied Psychology, 87*(3), 488-496. doi:10.1037/0021-9010.87.3.488

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173-1182. doi:10.1037/0022-3514.51.6.1173

Bass, B. M. (1999). Two decades of research and development in transformational leadership. *European Journal of Work and Organizational Psychology, 8*(1), 9-32. doi:10.1080/135943299398410

Baxter, L. E. (2013). *Supportive leadership, employee engagement and occupational safety: A field study*. (Doctoral dissertation, University of Tennessee). Retrieved from http://trace.tennessee.edu/utk_graddiss/2556

Bhatnagar, J. (2012). Management of innovation: Role of psychological empowerment, work engagement and turnover intention in the Indian context. *The International Journal of Human Resource Management, 23*(5), 928-95 doi:10.1080 /09585192.2012.651313

Blake, R. R., & Mouton, J. S. (1967). Managerial grid in 3 dimensions. *Training and Development Journal*, *21*(1), 2-5.

Blake, R. R., & Mouton, J. S. (1975). An overview of the grid. *Training and development Journal*, *29*(5), 29-37.

Bonias, D., Bartram, T., Leggat, S. G., & Stanton, P. (2010). Does psychological empowerment mediate the relationship between high performance work systems and patient care quality in hospitals? *Asia Pacific Journal of Human Resources*, *48*(3), 319-337. doi:10.1177/1038411110381667

Bordin, C., Bartram, T., & Casimir, G. (2006). The antecedents and consequences of psychological empowerment among Singaporean IT employees. *Management Research News, 30*(1), 34-46. doi:10.1108/01409170710724287

Brewer, M. B. (2000). Research design and issues of validity. In H.T. Reis & C.M. Judd (Eds), *Handbook of research methods in social and personality psychology*, (pp. 3-16). doi:10.1017/CBO9780511996481.005

Bureau of Labor Statistics (2015). *Employer-reported workplace injury and illness- 2014.* Retrieved from http://www.bls.gov/news.release/pdf/osh.pdf

Bureau of Labor Statistics (2016a). *Employer-reported workplace injury and illness-2015.* Retrieved from http://www.bls.gov/news.release/pdf/osh.pdf

Bureau of Labor Statistics (2016b). *Labor force statistics from current population survey - 2016.* Retrieved from https://www.bls.gov/cps/cpsaat11b.pdf

Cain, M. K., Zhang, Z., & Yuan, K. H. (2016). Univariate and multivariate skewness and kurtosis for measuring nonnormality: Prevalence, influence and estimation. *Behavior Research Methods*, 1-20. doi:10.3758/s13428-016-0814-1

Chemers, M. (2014). *An integrative theory of leadership*. Mahwah, NJ: Psychology Press.

Christian, M. S., Bradley, J. C., Wallace, J. C., & Burke, M. J. (2009). Workplace safety: a meta-analysis of the roles of person and situation factors. *Journal of Applied Psychology*, *94*(5), 1103. doi:10.1037/a0016172

Clarke, S. (2006). The relationship between safety climate and safety performance: a meta-analytic review. *Journal of Occupational Health Psychology*, *11*(4), 315. doi:10.1037/1076-8998.11.4.315

Clarke, S. (2010). An integrative model of safety climate: Linking psychological climate and work attitudes to individual safety outcomes using meta-analysis. *Journal of Occupational and Organizational psychology*, *83*(3), 553-578. doi:10.1348/096317909X452122

Clarke, S. (2013). Safety leadership: A meta-analytic review of transformational and transactional leadership styles as antecedents of safety behaviors. *Journal of Occupational and Organizational Psychology*, *86*(1), 22-49. doi:10.1111/j.2044-8325.2012.02064.x

Cohen, J. (1992). A power primer. *Psychological Bulletin*, *112*(1), 155. doi:10.1037/0033-2909.112.1.155

Conchie, S. M., Moon, S., & Duncan, M. (2013). Supervisors' engagement in safety leadership: Factors that help and hinder. *Safety Science*, *51*(1), 109-117. doi:10.1016/j.ssci.2012.05.020

Conger, J. A., & Kanungo, R. N. (1988). The empowerment process: Integrating theory and practice. *Academy of Management Review*, *13*(3), 471-482. doi:10.5465/AMR.1988.4306983

Connors, J.V. & Caple, R. B. (2005). A review of group systems theory. *The Journal for Specialists in Group Work, 30*(2), 93-110. doi:10.1080/01933920590925940

Cooper Ph. D, M. D. (2000). Towards a model of safety culture. *Safety Science*, *36*(2), 111-136. doi:10.1016/S0925-7535(00)00035-7

Cooper, M. D., & Phillips, R. A. (2004). Exploratory analysis of the safety climate and safety behavior relationship. *Journal of Safety Research*, *35*(5), 497-512. doi:10.1016/j.jsr.2004.08.004

Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches*. Thousand Oaks, CA: Sage Publications.

Curcuruto, M., Mearns, K. J., & Mariani, M. G. (2016). Proactive role-orientation toward workplace safety: Psychological dimensions, nomological network and external validity. *Safety Science*, *87*, 144-155. doi:10.1016/j.ssci.2016.03.007

Deci, E. L., & Ryan, R. M. (1985). The general causality orientations scale: Self-determination in personality. *Journal of Research in Personality*, *19*(2), 109-134. doi:10.1016/0092-6566(85)90023-6

DeJoy, D. M., Della, L. J., Vandenberg, R. J., & Wilson, M. G. (2010). Making work safer: Testing a model of social exchange and safety management. *Journal of Safety Research*, *41*(2), 163-171. doi:10.1016/j.jsr.2010.02.001

DeJoy, D. M., Schaffer, B. S., Wilson, M. G., Vandenberg, R. J., & Butts, M. M. (2004). Creating safer workplaces: assessing the determinants and role of safety climate. *Journal of Safety Research*, *35*(1), 81-90. doi:10.1016/j.jsr.2003.09.018

de Klerk, S., & Stander, M. W. (2014). Leadership empowerment behavior, work engagement and turnover intention: the role of psychological empowerment. *Journal of Positive Management*, *5*(3), 28. doi:10.12775/JPM.2014.018

de Koster, R. B., Stam, D., & Balk, B. M. (2011). Accidents happen: The influence of safety-specific transformational leadership, safety consciousness, and hazard reducing systems on warehouse accidents. *Journal of Operations Management*, *29*(7), 753-765. doi:10.1016/j.jom.2011.06.005

De Villiers, J. R., & Stander, M. W. (2011). Psychological empowerment, work engagement and turnover intention: The role of leader relations and role clarity in a financial institution. *Journal of Psychology in Africa*, *21*(3), 405-412. Retrieved from https://www.researchgate.net/profile/Marius_Stander/publication/284714989_Psychological_empowerment_work_engagement_and_turnover_intention_The_role_of_leader_relations_and_role_clarity_in_a_financial_institution/links/565fdfea08aefe619b28bb2a/Psychological-empowerment-work-engagement-and-turnover-

intention-The-role-of-leader-relations-and-role-clarity-in-a-financial-institution.pdf

Drost, E. A. (2011). Validity and reliability in social science research. *Education Research and Perspectives*. *38*(1), 105. Retrieved from http://erpjournal.net/wp-content/uploads/2012/07/ERPV38-1.-Drost-E.-2011.-Validity-and-Reliability-in-Social-Science-Research.pdf

Dust, S. B., Resick, C. J., & Mawritz, M. B. (2014). Transformational leadership, psychological empowerment, and the moderating role of mechanistic–organic contexts. *Journal of Organizational Behavior*, *35*(3), 413-433. doi:10.1002/job.1904

Eid, J., Mearns, K., Larsson, G., Laberg, J. C., & Johnsen, B. H. (2012). Leadership, psychological capital and safety research: Conceptual issues and future research questions. *Safety Science*, *50*(1), 55-61. doi:10.1016/j.ssci.2011.07.001

Fernandez, S., & Moldogaziev, T. (2013). Employee empowerment, employee attitudes, and performance: Testing a causal model. *Public Administration Review*, *73*(3), 490-506. doi:10.1111/puar.12049

Fiedler, F. E. (1970). *Personality, motivational systems, and behavior of high and low LPC persons* (No. TR-70-12). Washington University, Seattle Department of Psychology. doi:10.1177/001872677202500502

Field, A. (2013). *Discovering statistics using IBM SPSS statistics*. Thousand Oaks, CA: SAGE Publications, Inc.

Fisher, C. B. (2013). *Decoding the ethics code: A practical guide for psychologists* (3rd ed.). Thousand Oaks, CA: SAGE Publications, Inc.

Flin, R., Mearns, K., O'Connor, P., & Bryden, R. (2000). Measuring safety climate: identifying the common features. *Safety Science, 34*(1), 177-192. doi:10.1016/S0925-7535(00)00012-6

Fogarty, G. J., & Shaw, A. (2010). Safety climate and the theory of planned behavior: Towards the prediction of unsafe behavior. *Accident Analysis & Prevention, 42*(5), 1455-1459. doi:10.1016/j.aap.2009.08.008

Folkard, S. (2008). Shift work, safety, and aging. *Chronobiology International*, *25*(2-3), 183-198. doi:10.1080/07420520802106694

Fong, K. H., & Snape, E. (2015). Empowering leadership, psychological empowerment and employee Outcomes: Testing a multi-level mediating model. *British Journal of Management*, *26*(1), 126-138. doi:10.1111/1467-8551.12048

Ford, M. T., & Tetrick, L. E. (2011). Relations among occupational hazards, attitudes, and safety performance. *Journal of Occupational Health Psychology*, *16*(1), 48. doi:10.1037/a0021296

Frankfort-Nachmias, C., & Nachmias, D. (2008). *Research methods in the social sciences* (7th ed.). New York: Worth.

Fugas, C. S., Silva, S. A., & Meliá, J. L. (2012). Another look at safety climate and safety behavior: Deepening the cognitive and social mediator mechanisms. *Accident Analysis & Prevention*, *45*, 468-477. doi:10.1016/j.aap.2011.08.013

Fugas, C. S., Silva, S. A., & Meliá, J. L. (2013). Profiling safety behaviors: exploration of the socio-cognitive variables that best discriminate between different behavioral patterns. *Risk Analysis*, *33*(5), 838-850. doi:10.1111/j.1539-6924.2012.01913.x

Gagné, M., & Deci, E. L. (2005). Self-determination theory and work motivation. *Journal of Organizational Behavior, 26*(4), 331–362. doi:10.1002/job.322

Gill, A., Fitzgerald, S., Bhutani, S., Mand, H., & Sharma, S. (2010). The relationship between transformational leadership and employee desire for empowerment. *International Journal of Contemporary Hospitality Management*, *22*(2), 263-273. doi:10.1108/09596111011018223

Goethals, G. R., Sorenson, G. J., & Burns, J. M. (Eds.). (2004). *Encyclopedia of leadership: AE* (1). SAGE Publications. doi:10.4135/9781412952392

Gregoire, M. B., & Arendt, S. W. (2014). Leadership: Reflections over the past 100 years. *Journal of the Academy of Nutrition and Dietetics, 114*(5), S10-S19. doi:10.1016/j.jand.2014.02.023

Gregory, B. T., Albritton, M. D., & Osmonbekov, T. (2010). The mediating role of psychological empowerment on the relationships between P–O fit, job satisfaction, and in-role performance. *Journal of Business and Psychology*, *25*(4), 639-647. doi:10.1007/s10869-010-9156-7

Griffin, M. A., & Curcuruto, M. (2016). Safety climate in organizations. *Annual Review of Organizational Psychology and Organizational Behavior*, *3*, 191-212. doi:10.1146/annurev-orgpsych-041015-062414

Griffin, M. A., & Hu, X. (2013). How leaders differentially motivate safety compliance and safety participation: the role of monitoring, inspiring, and learning. *Safety Science*, *60*, 196-202. doi:10.1016/j.ssci.2013.07.019

Gyekye, S A.., & Haybatollahi, M. (2014). Relationship between organizational justice and organizational safety climate: do fairness perceptions influence employee safety behaviour? *International Journal of Occupational Safety and Ergonomics*, *20*(2), 199-211. doi:10.1080/10803548.2014.11077045

Hackman, J. R., & Oldham, G. R. (1976). Motivation through the design of work: Test of a theory. *Organizational behavior and human performance*, *16*(2), 250-279. doi:10.1016/0030-5073(76)90016-7

Harrison, D. A., Newman, D. A., & Roth, P. L. (2006). How important are job attitudes? Meta-analytic comparisons of integrative behavioral outcomes and time sequences. *Academy of Management Journal*, *49*(2), 305-325. doi:10.5465/AMJ.2006.20786077

Hechanova-Alampay, R., & Beehr, T. A. (2001). Empowerment, span of control, and safety performance in work teams after workforce reduction. *Journal of Occupational Health Psychology*, *6*(4), 275. doi:10.1037/1076-8998.6.4.275

Hersey, P., Blanchard, K. H., & Natemeyer, W. E. (1979). Situational leadership, perception, and the impact of power. *Group & Organization Management*, *4*(4), 418-428. doi:10.1177/105960117900400404

Horton, N. J., & Kleinman, K. P. (2007). Much ado about nothing: A comparison of missing data methods and software to fit incomplete data regression models. *The American Statistician, 61*(1), 79-90. doi:10.1198/000313007X172556

Huang, Y. H., Zohar, D., Robertson, M. M., Garabet, A., Lee, J., & Murphy, L. A. (2013). Development and validation of safety climate scales for lone workers using truck drivers as exemplar. *Transportation Research Part F: Traffic Psychology and Nehaviour, 17,* 5-19. doi 10.1016/j.trf.2012.08.011

James, L. A., & James, L. R. (1989). Integrating work environment perceptions: Explorations into the measurement of meaning. *Journal of Applied Psychology*, *74*(5), 739 – 751. doi: 10.1037/0021-9010.74.5.739

James, L. R., & Jones, A. P. (1974). Organizational climate: A review of theory and research. *Psychological Bulletin*, *81*(12), 1096. doi:10.1037/h0037511

Jex, S.M, & Britt, T. W. (2014). Organizational psychology: A scientist-practitioner approach. Hoboken, NJ: John Wiley & Sons, Inc.

Johnson, S. E. (2007). The predictive validity of safety climate. *Journal of Safety Research*, *38*(5), 511-521. doi:10.1016/j.jsr.2007.07.001

Joo, B. K. B., & Lim, T. (2013). Transformational leadership and career satisfaction: The mediating role of psychological empowerment. *Journal of Leadership & Organizational Studies, 20*(3) doi:/10.1177/1548051813484359

Koberg, C. S., Boss, R. W., Senjem, J. C., & Goodman, E. A. (1999). Antecedents and outcomes of empowerment empirical evidence from the health care industry.

Group & Organization Management, *24*(1), 71-91. doi:10.1177/1059601199241005

Koopman, J., Howe, M., Hollenbeck, J. R., & Sin, H. P. (2015). Small sample mediation testing: Misplaced confidence in bootstrapped confidence intervals. *Journal of Applied Psychology*, *100*(1), 194. doi:10.1037/a0036635

Kvalheim, S. A., Antonsen, S., & Haugen, S. (2016). Safety climate as an indicator for major accident risk: Can we use safety climate as an indicator on the plant level? *International Journal of Disaster Risk Reduction*. 18, 23-31. doi:10.1016/j.ijdrr.2016.05.011

Laszlo, A., & Krippner, S. (1998). Systems theories: Their origins, foundations, and development. *Advances in Psychology- Amsterdam, 126*, 47-76. doi:10.1016/S0166-4115(98)80017-4

Lawler, E. E. (1988). Choosing an involvement strategy. *The Academy of Management Executive*, *2*(3), 197-204. doi:10.5465/AME.1988.4277254

Lawler, E. E., & Suttle, J. L. (1973). Expectancy theory and job behavior. *Organizational Behavior and Human Performance*, *9*(3), 482-503. doi: 10.1016/0030-5073(73)90066-4

Leigh, J. P. (2013). At $250B, costs of occupational injury and illness exceed cost of cancer. *Economic Policy Institute*. Retrieved from http://www.epi.org/blog/250b-costs-occupational-injury-illness-exceed/

Leitão, S., & Greiner, B. A. (2016). Organisational safety climate and occupational accidents and injuries: an epidemiology-based systematic review. *Work & Stress, 30*(1), 71-90. doi:10.1080/02678373.2015.1102176

Li, Y., Wei, F., Ren, S., & Di, Y. (2015). Locus of control, psychological empowerment and intrinsic motivation relation to performance. *Journal of Managerial Psychology, 30*(4), 422-438. doi:10.1108/JMP-10-2012-0318

Li, X., Wong, W., Lamoureux, E. L., & Wong, T. Y. (2012). Are linear regression techniques appropriate for analysis when the dependent (outcome) variable is not normally distributed? Letters. *Investigative Ophthalmology & Visual Science, 53*(6), 3082-3083. doi:10.1167/10vs.12-9967.

Liden, R. C., Wayne, S. J., & Sparrowe, R. T. (2000). An examination of the mediating role of psychological empowerment on the relations between the job, interpersonal relationships, and work outcomes. *Journal of Applied Psychology, 85*(3), 407 – 416. doi:10.1037/0021-9010.85.3.407

Liu, X., Huang, G., Huang, H., Wang, S., Xiao, Y., & Chen, W. (2015). Safety climate, safety behavior, and worker injuries in the Chinese manufacturing industry. *Safety Science, 78*, 173-178. doi:10.1016/j.ssci.2015.04.023

Locke & Schweiger (1979). Participation in decision making: One more look. In B.M. Staw (Ed.), *Research in Organizational Behavior, 1*, 265-339, Greenwich, CN: JAI Press.

Luria, G., & Morag, I. (2012). Safety management by walking around (SMBWA): A safety intervention program based on both peer and manager participation. *Accident Analysis & Prevention*, *45*, 248-257. doi:10.1016/j.aap.2011.07.010

Luria, G., & Yagil, D. (2010). Safety perception referents of permanent and temporary employees: safety climate boundaries in the industrial workplace. *Accident Analysis & Prevention*, *42*(5), 1423-1430. doi:10.1016/j.aap.2009.02.016

Maynard, M. T., Gilson, L. L., & Mathieu, J. E. (2012). Empowerment—fad or fab? A multilevel review of the past two decades of research. *Journal of Management*, *38*(4), 1231-1281. doi:10.1177/0149206312438773

Maynard, M. T., Mathieu, J. E., Gilson, L. L., O'Boyle, E. H., & Cigularov, K. P. (2013). Drivers and outcomes of team psychological empowerment a meta-analytic review and model test. *Organizational Psychology Review*, *3*(2), 101-137. doi:10.1177/2041386612456868

McEwan, A. M. (1999). *A systems approach to empowerment in manufacturing enterprises*. (Doctoral dissertation, Cranfield University). Retrieved from Retrieved form dspace.lib.cranfield.ac.uk

McGregor, D. M. (1960). *The human side of enterprise*. New York, NY: McGraw-Hill. doi:10.1016/B978-0-12-054752-4.50008-7

Menon, S. (2001). Employee empowerment: An integrative psychological approach. *Applied Psychology*, *50*(1), 153-180. doi:10.1111/1464-0597.00052

Min, Y., & Agresti, A. (2005). Random effect models for repeated measures of zero-inflated count data. *Statistical Modelling*, *5*(1), 1-19. doi: 10.1191/1471082X05st084oa

Neal, A., & Griffin, M. A. (2006). A study of the lagged relationships among safety climate, safety motivation, safety behavior, and accidents at the individual and group levels. *Journal of Applied Psychology*, *91*(4), 946. doi:10.1037/0021-9010.91.4.946

Neal, A., Griffin, M. A., & Hart, P. M. (2000). The impact of organizational climate on safety climate and individual behavior. *Safety Science*, *34*(1), 99-109. doi:10.1016/S0925-7535(00)00008-4

Nedovic, M., Sudaric, Z., & Ivankovic, D. (2013). Leadership skills in order to increase employee efficiency. *European Scientific Journal*. *4*, 84-90. doi:10.1191/1471082X05st084oa

Nielsen, M. B., Skogstad, A., Matthiesen, S. B., & Einarsen, S. (2016). The importance of a multidimensional and temporal design in research on leadership and workplace safety. *The Leadership Quarterly*, *27*(1), 142-155. doi:10.1016/j.leaqua.2015.08.003

Occupational Safety and Health Administration. (2015). *Congressional testimonies*. Retrieved from https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=TESTIMONIES&p_id=1722

Occupational Safety and Health Administration. (2016). *All about OSHA*. Retrieved from https://www.osha.gov/Publications/all_about_OSHA.pdf

Onwuegbuzie, A. J. (2000). *Expanding the framework of internal and external validity in quantitative research*. Paper presented at the meeting of the Association for the Advancement of Educational Research, Ponte Vedra, FL. Retrieved from http://files.eric.ed.gov/fulltext/ED448205.pdf

Ozer, E. M., & Bandura, A. (1990). Mechanisms governing empowerment effects: a self-efficacy analysis. *Journal of Personality and Social Psychology*, *58*(3), 472. doi:10.1037/0022-3514.58.3.472

Podsakoff, P. M., MacKenzie, S. B., & Bommer, W. H. (1996). Transformational leader behaviors and substitutes for leadership as determinants of employee satisfaction, commitment, trust, and organizational citizenship behaviors. *Journal of Management*, *22*(2), 259-298. doi:10.1177/014920639602200204

Podsakoff, P. M., MacKenzie, S. B., Moorman, R. H., & Fetter, R. (1990). Transformational leader behaviors and their effects on followers' trust in leader, satisfaction, and organizational citizenship behaviors. *The Leadership Quarterly*, *1*(2), 107-142. doi:10.1016/1048-9843(90)90009-7

Posthuma, R. A., Campion, M. C., Masimova, M., & Campion, M. A. (2013). A high-performance work practices taxonomy integrating the literature and directing future research. *Journal of Management*, *39*(5), 1184-1220. doi:10.1177/0149206313478184

Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers*, *36*(4), 717-731. doi:10.3758/BF03206553

Probst, T. M., & Estrada, A. X. (2010). Accident under-reporting among employees: Testing the moderating influence of psychological safety climate and supervisor enforcement of safety practices. *Accident Analysis & Prevention*, *42*(5), 1438-1444. doi:10.1016/j.aap.2009.06.027

Probst, T. M. (2015). Organizational safety climate and supervisor safety enforcement: Multilevel explorations of the causes of accident underreporting. *Journal of Applied Psychology*, *100*(6), 1899. doi:10.1037/a0039195

Quiñones, M., Van den Broeck, A., & De Witte, H. (2013). Do job resources affect work engagement via psychological empowerment? A mediation analysis. *Revista de Psicología del Trabajo y de las Organizaciones*, *29*(3), 127. doi:10.5093/tr2013a18

Rudestam, K. E., & Newton, R. R. (2015). *Surviving your dissertation: A comprehensive guide to content and process*. Thousand Oaks, CA: SAGE Publications.

Rogelberg, S. G. (Ed.). (2007). *Encyclopedia of industrial and organizational psychology*. Thousand Oaks, CA: SAGE Publications. doi:10.4135/9781412952651

Schein, E. H. (1990). *Organizational culture*. *American Psychologist*, *45*(2), l09-119. Association. doi:10.1037/0003-066X.45.2.109

Schneider, B., Ehrhart, M. G., & Macey, W. H. (2011). Perspectives on organizational climate and culture. In S. Zedeck, S. Zedeck (Eds.), *APA handbook of industrial and organizational psychology, Vol 1: Building and developing the organization* (pp. 373-414). Washington, DC, US: American Psychological Association. doi:10.1037/12169-012

Schneider, B., Ehrhart, M. G., & Macey, W. H. (2013). Organizational climate and culture. *Annual Review of Psychology*, *64*, 361-388. doi:10.1146/annurev-psych-113011-143809

Seibert, S. E., Silver, S. R., & Randolph, W. A. (2004). Taking empowerment to the next level: A multiple-level model of empowerment, performance, and satisfaction. *Academy of Management Journal*, *47*(3), 332-349. doi:10.2307/20159585

Seibert, S. E., Wang, G., & Courtright, S. H. (2011). Antecedents and consequences of psychological and team empowerment in organizations: a meta-analytic review. *Journal of Applied Psychology*, *96*(5), 981. doi:10.1037/a0022676

Slack, M. K., & Draugalis, J. R. (2001). Establishing the internal and external validity of experimental studies. *American Journal of Health System Pharmacy*, *58*(22), 2173-2184. Retrieved from https://www.researchgate.net/publication/260267611_Establishing_the_internal_and_external_validity_of_experimental_studies

Smith, G. S., Huang, Y. H., Ho, M., & Chen, P. Y. (2006). The relationship between safety climate and injury rates across industries: The need to adjust for injury

hazards. *Accident Analysis & Prevention*, *38*(3), 556-562. doi:10.1016/j.aap.2005.11.013

Spreitzer, G. M. (1992). *When organizations dare: The dynamics of individual empowerment in the workplace* (Doctoral dissertation, The University of Michigan). Retrieved from https://search-proquest-com.

Spreitzer, G. M. (1995a). An empirical test of a comprehensive model of intrapersonal empowerment in the workplace. *American Journal of Community Psychology*, *23*(5), 601-629. doi:10.1007/BF02506984

Spreitzer, G. M. (1995b). Psychological empowerment in the workplace: Dimensions, measurement, and validation. *Academy of management Journal*, *38*(5), 1442-1465. doi:10.2307/256865

Spreitzer, G. M. (2008). Taking stock: A review of more than twenty years of research on empowerment at work. In J. Barling & C.L. Cooper (Eds.), *The Sage Handbook of organizational behavior. (pp.*, 54-72). Sage Publications. Retrieved from http://webuser.bus.umich.edu/spreitze/Pdfs/TakingStock.pdf

Spreitzer, G. M., DeJanasz, S. C., & Quinn, R. E. (1997). Empowered to lead: The role of psychological empowerment in leadership. *Journal of Organizational Behavior*, *20*, 511-526. doi:10.1002/(SICI)1099-1379(199907)20:4%3C511::AID-JOB900%3E3.0.CO;2-L

Spreitzer, G. M., Kizilos, M. A., & Nason, S. W. (1997). A dimensional analysis of the relationship between psychological empowerment and effectiveness satisfaction,

and strain. *Journal of Management, 23*(5), 679-704. doi:10.1177/014920639702300504

Stone-Romero, E. F., & Rosopa, P. J. (2008). The relative validity of inferences about mediation as a function of research design characteristics. *Organizational Research Methods, 11*(2), 326-352. doi:10.1016/S0149-2063(97)90021-0

Sunindijo, R. Y., & Zou, P. X. (2013). The roles of emotional intelligence, interpersonal skill, and transformational leadership on improving construction safety performance. *Construction Economics and Building, 13*(3), 97-113. doi:10.5130/ajceb.v13i3.3300

Swanson, R. A. & Holton III, E. F. (2005). *Research in organizations*. San Francisco, CA: Berrett-Koehler Publishers, Inc.

Taiwo, A. A., Agwu, M. E., & Lawal, F. A. (2016). Vision and mission in organization: Myth or heuristic device? *The International Journal of Business & Management, 4*(3), 127. Retrieved from https://www.researchgate.net/publication/312603042_Vision_and_Mission_in_Organization_Myth_or_Heuristic_Device

Taiwo, O. A., Cantley, L. F., Slade, M. D., Pollack, K. M., Vegso, S., Fiellin, M. G., & Cullen, M. R. (2009). Sex differences in injury patterns among workers in heavy manufacturing. *American Journal of Epidemiology, 169*(2), 161-166. doi:10.1093/aje/kwn304

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education, 2*, 53-55. doi:10.5116/ijme.4dfb.8dfd

The National Institute for Occupational Safety and Health (NIOSH). (November 2015). Occupational injury: Do family members pay a price? *NIOSH Research Rounds*. Retrieved from http://www.cdc.gov/niosh/Research-Rounds/ResRoundsV1N5.html#Occupational%20Injury:%20Do%20Family%20Members%20Pay%20a%20Price

Thomas, K. W., & Velthouse, B. A. (1990). Cognitive elements of empowerment: An "interpretive" model of intrinsic task motivation. *Academy of Management Review*, *15*(4), 666-681. doi:10.5465/AMR.1990.4310926

Tong, D. Y. K., Rasiah, D., Tong, X. F., & Lai, K. P. (2015). Leadership empowerment behaviour on safety officer and safety teamwork in manufacturing industry. *Safety Science*, *72*, 190-198. doi:10.1016/j.ssci.2014.09.009

Törner, M. (2011). The “social-physiology” of safety. An integrative approach to understanding organisational psychological mechanisms behind safety performance. *Safety Science*, *49*(8), 1262-1269. doi:10.1016/j.ssci.2011.04.013

Uhl-Bien, M., Riggio, R. E., Lowe, K. B., & Carsten, M. K. (2014). Followership theory: A review and research agenda. *The Leadership Quarterly*, *25*(1), 83-104. doi:10.1016/j.leaqua.2013.11.007

Ulrich, W. & Reynolds, M. (2010). Critical systems heuristics. In: M. Reynolds & S. Holwell, Editor (Eds). *Systems approaches to managing change: A practical guide*. (pp. 243–292). London, England: Springer. doi:10.1007/978-1-84882-809-4_6

United States Department of Agriculture. (2017). *Manufacturing: Food and beverage manufacturing.* Retrieved from https://www.ers.usda.gov/topics/food-markets-prices/processing-marketing/manufacturing.aspx

Van Knippenberg, D., & Sitkin, S. B. (2013). A critical assessment of charismatic - transformational leadership research: Back to the drawing board? *The Academy of Management Annals, 7*(1), 1-60. doi:10.1080/19416520.2013.759433

Verbeke, W., Volgering, M., & Hessels, M. (1998). Exploring the conceptual expansion within the field of organizational behaviour: Organizational climate and organizational culture. *Journal of Management Studies, 35*(3), 303-329. doi:10.1111/1467-6486.00095

von Bertalanffy, L. (1972). The history and status of general systems theory. *Academy of Management Journal, 15*(4), 407-426. doi:10.2307/255139

von Thiele Schwarz, U., Hasson, H., & Tafvelin, S. (2016). Leadership training as an occupational health intervention: Improved safety and sustained productivity. *Safety Science, 81*, 35-45. doi:10.1016/j.ssci.2015.07.020

Vredenburgh, A. G. (2002). Organizational safety: Which management practices are most effective in reducing employee injury rates? *Journal of Safety Research, 33*(2), 259-276. doi:10.1016/S0022-4375(02)00016-6

Wallach, V. A., & Mueller, C. W. (2006). Job characteristics and organizational predictors of psychological empowerment among paraprofessionals within human service organizations: An exploratory study. *Administration in Social Work, 30*(1), 95-115. doi:10.1300/J147v30n01_06

Wang, S., & Liu, Y. (2015). Impact of professional nursing practice environment and psychological empowerment on nurses' work engagement: test of structural equation modelling. *Journal of Nursing Management*, *23*(3), 287-296. doi:10.1111/jonm.12124

Wang, G., Oh, I. S., Courtright, S. H., & Colbert, A. E. (2011). Transformational leadership and performance across criteria and levels: A meta-analytic review of 25 years of research. *Group & Organization Management*, *36*(2), 223-270. doi:10.1177/1059601111401017

Wills, A. R., Biggs, H. C., & Watson, B. (2005). Analysis of a Safety Climate Measure for Occupational Vehicle Drivers and Implications for Safer Workplaces. *The Australian Journal of Rehabilitation Counselling*, *11*(01), 8-21. doi:10.1017/S1323892200000132

Yammarino, F. (2013). Leadership past, present, and future. *Journal of Leadership & Organizational Studies*, *20*(2), 149-155. doi:10.1177/1548051812471559

Yao, Q., Chen, R., & Cai, G. (2013). How internal marketing can cultivate psychological empowerment and enhance employee performance. *Social Behavior and Personality: an international journal*, *41*(4), 529-537. doi:10.2224/sbp.2013.41.4.529

Zhang, X. & Barton, K.M. (2010). Linking empowering leadership and employee creativity: The influence of psychological empowerment, intrinsic motivation, and

creative process engagement. *Academy of Management Journal*, *53*, 107-128. doi:10.5465/AMJ.2010.48037118

Zhao, X., Lynch, J. G., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of Consumer Research*, *37*(2), 197-206. doi:10.1086/651257

Zhu, W., Sosik, J. J., Riggio, R. E., & Yang, B. (2012). Relationships between transformational and active transactional leadership and followers' organizational identification: The role of psychological empowerment. *Journal of Behavioral and Applied Management*, *13*(3), 186-212. Retrieved from https://pdfs.semanticscholar.org/0e89/571fe5c8a2eab4d39b154656a9f61857791e.pdf

Zimmerman, M. A. (1995). Psychological empowerment: Issues and illustrations. *American Journal of Community Psychology*, *23*(5), 581-599. doi:10.1007/BF02506983

Zimmerman, M. A., Israel, B. A., Schulz, A., & Checkoway, B. (1992). Further explorations in empowerment theory: An empirical analysis of psychological empowerment. *American Journal of Community Psychology*, *20*(6), 707-727. doi:10.1007/BF01312604

Zohar, D. (1980). Safety climate in industrial organizations: theoretical and applied implications. *Journal of Applied Psychology*, *65*(1), 96. doi:10.1037/0021-9010.65.1.96

Zohar, D. (2000). A group-level model of safety climate: testing the effect of group climate on micro accidents in manufacturing jobs. *Journal of Applied Psychology*, *85*(4), 587. doi:10.1037/0021-9010.85.4.587

Zohar, D. (2008). Safety climate and beyond: A multi-level multi-climate framework. *Safety Science*, *46*(3), 376-387. doi:10.1016/j.ssci.2007.03.006

Zohar, D. (2010). Thirty years of safety climate research: Reflections and future directions. *Accident Analysis & Prevention*, *42*(5), 1517-1522. doi:10.1016/j.aap.2009.12.019

Zohar, D. (2014). Safety climate: Conceptualization, measurement, and improvement. In B, Schneider & K.M. Barbera (Eds.), *The Oxford handbook of organizational climate and culture*, (pp. 317-334). New York, NY: Oxford University Press.

Zohar, D., Huang, Y. H., Lee, J., & Robertson, M. M. (2015). Testing extrinsic and intrinsic motivation as explanatory variables for the safety climate–safety performance relationship among long-haul truck drivers. *Transportation Research Part F: Traffic Psychology and Behaviour*, *30*, 84-96. doi:10.1016/j.trf.2015.01.014

Zohar, D., & Luria, G. (2004). Climate as a social-cognitive construction of supervisory safety practices: scripts as proxy of behavior patterns. *Journal of Applied Psychology*, *89*(2), 322. doi:10.1037/0021-9010.89.2.322

Zohar, D., & Luria, G. (2005). A multilevel model of safety climate: cross-level relationships between organization and group-level climates. *Journal of Applied Psychology*, *90*(4), 616. doi:10.1037/0021-9010.90.4.616

Appendix A: Permission – Organization – Level Climate Measure

AMERICAN PSYCHOLOGICAL ASSOCIATION

INVOICE NO. N/A
Federal Tax I.D. 53-0205890
Date: July 25, 2016

IN MAKING PAYMENT REFER TO THE ABOVE INVOICE NUMBER

Christine Healy

APA Permissions Office
750 First Street, NE
Washington, DC 20002-4242
www.apa.org/about/copyright.html permissions@apa.org
202-336-5650 Fax: 202-336-5633

IF THE TERMS STATED BELOW ARE ACCEPTABLE, PLEASE SIGN AND RETURN ONE COPY TO APA. RETAIN ONE COPY FOR YOUR RECORDS. PLEASE NOTE THAT PERMISSION IS NOT OFFICIAL UNTIL APA RECEIVES THE COUNTERSIGNED FORM AND ANY APPLICABLE FEES.

Request is for the following APA-copyrighted material: Scale content

- Appendix A, p. 628, from Zohar, D., & Luria, G. (2005). A Multilevel Model of Safety Climate: Cross-Level Relationships Between Organization and Group-Level Climates. *Journal of Applied Psychology*, *90*(4), 616-628. http://dx.doi.org/10.1037/0021-9010.90.4.616

For the following use: **Non-Commercial Research or Educational Use in:** a) thesis or dissertation research (such as data collection or surveys) via an online password-protected web site and/or in hardcopy format; and b) print and/or digital versions of the final thesis or dissertation document provided that digital distribution is limited to non-commercial, secure and restricted web site(s).
File: Healy, Chris (author)

Permission is granted for the nonexclusive use of APA-copyrighted material specified on the attached request contingent upon fulfillment of the conditions indicated below:

1. The fee is waived.
2. The reproduced material must include the following credit line: Copyright © 2005 American Psychological Association. Reproduced [or Adapted] with permission. The official citation that should be used in referencing this material is [list the original APA bibliographic citation].
3. **For all online use:** (a) The following notice must be added to the credit line: No further reproduction or distribution is permitted without written permission from the American Psychological Association; (b) the credit line must appear on the first screen on which the APA content appears; and (c) the APA content must be posted on a secure and restricted web site.

This agreement constitutes permission to reproduce only for the purposes specified on the attached request and does not extend to future editions or revisions, derivative works, translations, adaptations, promotional material, or any other formats or media. Permission applies solely to publication and distribution in the English language throughout the world, unless otherwise stated. No changes, additions, or deletions to the material other than any authorized in this correspondence shall be made without prior written consent by APA.

This permission does not include permission to use any copyrighted matter obtained by APA or the author(s) from other sources that may be incorporated in the material. It is the responsibility of the applicant to obtain permission from such other sources.

ACCEPTED AND AGREED TO BY:

Signature redacted

Applicant

8-2-16
Date

PERMISSION GRANTED ON ABOVE TERMS:

for the American Psychological Association

July 25, 2016
Date

_____ I wish to cancel my request for permission at this time.

Appendix B: Permission – Psychological Empowerment Measure

Gmail by Google

Christine Healy <christine.healy@waldenu.edu>

Permission to use measure
5 messages

Christine Healy <christine.healy@waldenu.edu> Thu, May 12, 2016 at 9:50 PM
To: spreitze@umich.edu, szaid@aom.org

I am a doctoral student in my dissertation phase with Walden University. My research study is centered on various employee attitudes as they relate to industrial safety outcomes. One such attitude I am testing is that of employee psychological empowerment. Of your many accomplishments you published an article in Academy of Management Journal in 1995 titled, *Psychological Empowerment in the Workplace: Dimensions, Measurement, and Validation* where you assessed a mulit-dimensional measure of psychological empowerment.

The purpose of my correspondence with you is to obtain permission to use this measure in my research toward the completion of my dissertation and my doctoral degree.

I have included the Susan Zaid from the publisher on this email so I can obtain both the author's and the publishers permission. Additionally, I wanted to ask for a clean copy of the questionnaire or direction on where to obtain it.

I am excited about the use of this measure in my research and hope that it helps to show another realm of use to apply the measure and contribute to deeper understanding of workplace safety outcomes. I sincerely thank you for your time in this matter and hope to hear from you and the publisher very soon.

Kind regard,

Christine Healy

Gretchen Spreitzer <spreitze@umich.edu> Mon, May 16, 2016 at 6:53 AM
To: Christine Healy <christine.healy@waldenu.edu>

Hello christine, What interesting research you are doing! You are welcome to use the instrument in your dissertation. Please share you findings with me so that I can learn from you!

You can find the instrument on my website which you can access through my signature below. Best wishes.
[Quoted text hidden]
--
Gretchen Spreitzer
Keith E. and Valerie J. Alessi Professor of Business Administration
Professor of Management and Organizations
Ross School of Business
Ann Arbor, MI 48109-1234
(734) 936.2835
http://webuser.bus.umich.edu/spreitze/

Irina Burns <iburns@aom.org> Tue, Jun 21, 2016 at 8:49 AM
To: christine.healy@waldenu.edu

Dear Christine,

We grant you nonexclusive rights, free of charge, to use the measure in your dissertation.

Best wishes,

Irina

Irina Burns
Managing Editor and Publishing Services Specialist
Academy of Management
PO Box 3020
Briarcliff Manor NY 10510-8020

Appendix C: Permission – Leader Behavior Scale

Appendix D: Demographic Questionnaire

Demographic Questionnaire

Please complete all items in this questionnaire. The information contained will assist in determining the relationship between safety climate, leadership, and employee psychological empowerment on work-related injuries. All information provide will be kept confidential. There will be no personal identifiers in this information.
Please mark the appropriate line:

Age range:
_____18-24
_____25-34

_____35-44
_____45-54
_____55-64
_____65 and over

Gender:
_____Male
_____Female

Payroll Status:
_____Full-time
_____Part-time

_____Hourly
_____Salaried

Occupation:
_____Production Line

_____Maintenance

_____Sanitation
_____Logistics/Forklift Operator
_____Supervisor
_____Manager
_____Other: Please Specify
_____

Job Tenure:
_____0-6 months

_____7 – 12 months

_____13 – 23 months
_____2-4 years
_____5 - 9 years
_____10 -14 years
_____15 – 19 years
_____Over 20 years

Number of On-the-Job Injuries in the past 12 months (including those requiring first and outside medical attention):
_____None
_____ 1
_____ 2 or more